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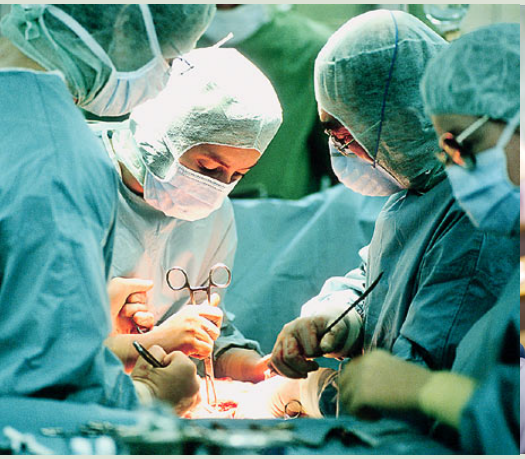
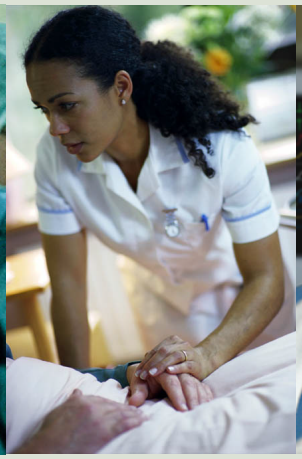

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Contents

Pain following day case oral surgery – an investigation into post-operative analgesia

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Abstract

Aim: To investigate the post-operative pain experience of patients undergoing oral surgery under day case general anaesthesia.

Methods: All ASA I and II patients, aged 16 years and over requiring oral surgery procedures under day case general anaesthetic over a 3 month period were included. Patients were asked to assess their own level of pain using a numerical rating scale at 6 and 24 hours following surgery. The type of surgery performed, type of analgesics prescribed, additional non-prescribed analgesics taken, satisfaction with analgesia provided and pain relief were also recorded.

Results: The data of 80 patients was obtained. Patients received post-operatively ibuprofen 600mg or paracetamol 1g or codeine/paracetamol combination (30/500) or both ibuprofen and a codeine/paracetamol combination. At 6 hours, 42.6% of patients experienced moderate to severe pain, whereas at 24 hours there was a minor reduction to 38.8%. Thirteen patients required additional non-prescribed analgesics, of these 10 patients belonged to the group who received ibuprofen 600mg alone. Eighty-nine percent of patients were satisfied with their pain relief when questioned. Overall, 70% of patients rated their pain relief as excellent.

Conclusion: Post-operative pain following oral surgery under day case general anaesthesia remains a clinical problem. Patients' reported satisfaction levels of pain relief were high despite a high proportion of patients experiencing moderate to severe pain. A more robust management strategy is required to improve the post-operative pain experience.

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Keywords: Post-operative pain; Third molar; Day case.

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Introduction

Oral surgery procedures may be performed on an inpatient or outpatient (day case) basis depending on a patient's medical status and the nature and complexity of the surgery. The provision of day case type surgery is on the increase. In a recent survey, it was found that 65% of elective surgery was performed on a day case basis in the UK and approximately 70% in the US [1]. Day case patients are selected based on a satisfactory pre-operative assessment of their medical status (ASA I or II) and Body Mass Index (BMI typically up to 35). Principal drivers for more day case surgery are the reduced waiting time and cost compared to inpatient care [2].

The provision of day case surgery is considered an ideal method of utilising health service resources to their maximum potential [3] and day case surgery is expected to increase in the UK National Health Service to three quarters of all operations carried out by 2010 [4]. However, there are concerns about the effects that this rapid growth has had on the pain experienced by patients having day case surgery [5–9].

Post-operative pain control for inpatients may be more easily managed with the selection of analgesics available, including opiates. Complications and side effects are more common following administration of a more potent analgesic especially opiates, as they can cause nausea, vomiting and even respiratory depression and hypotension at high dose. Observation and management of any complications is possible as an inpatient but not as an outpatient. Patients treated on a day case basis are reliant on self management and the care of family members or friends that may not have the expertise to manage complications that may arise [3]. Post-operative pain control for these patients is usually managed by over the counter analgesic prescriptions. According to an audit carried out by Mackintosh and Bowles over a 2 year period at a general hospital in the north of England about post-operative pain following day case surgery, it was found that 17-20% of patients experienced unacceptable levels of pain [10]. In a study to assess the intensity, duration and pain following day case surgery, 89 subjects were given a self administered questionnaire before leaving hospital and up to 7 days after discharge. It was found that 40% of the subjects experienced moderate to severe pain during the first 24 hours after hospital discharge. The authors concluded that the severity and duration of pain following day case surgery should not be underestimated and they recommended aggressive analgesic treatment whilst in hospital as well as a robust take home analgesic protocol [8].

Despite advances in anaesthesia and developments in the knowledge of pain control, it is well established that pain following day case surgery is still common and has been highlighted in several studies [6, 7, 11-13]. Several strategies have been recommended to improve the post-operative pain experience of day case patients including the provision of better patient information and communication about the surgical procedure, aggressive and more robust protocols for take home medication, pre-emptive analgesia, protective analgesia, and better analgesic self administration instructions [14-16]. In our own surgical practice we have developed the use of an analgesic protocol based on the best research evidence using paracetamol, ibuprofen and codeine/paracetamol combination.

Ibuprofen is commonly prescribed following oral surgery procedures due to its anti-inflammatory properties. Other analgesics frequently

prescribed include dihydrocodeine and paracetamol [17]. A systematic review was conducted by Barden and colleagues comparing the relative efficacy of analgesics following third molar extraction. For each of the eligible randomised controlled trials in this review, the number of patients with at least 50% maximum total pain relief (max TOTPAR), number needed to treat (NNT) and number needed to harm (NNH) were calculated. NNT is an estimate of how many people need to receive the treatment before one person experiences benefit. Lower value of NNT means better efficacy. NNH in this review refers to the number of adverse events. Among the different ibuprofen doses, 400mg ibuprofen had the lowest NNT value of 2.2 in the group compared to 200mg (NNT 2.7) and 600mg ibuprofen (NNT 2.8). Valdecoxib 40mg and diclofenac 100mg had a NNT value of 1.6, whereas for paracetamol 1g, NNT was 3.7. Among the worst analgesic for post-operative pain following third molar removal was dihydrocodeine [18].

Paracetamol is an effective analgesic for treatment of mild to moderate pain with minimal adverse effects. Its effectiveness is improved by the addition of codeine. In another systematic review, the authors assessed the analgesic efficacy and adverse effects of a single dose of oral paracetamol alone and in combination with codeine for moderate to severe post-operative pain. In this review, paracetamol 1g for post-operative pain had an NNT of 4.6 for at least 50% pain relief when compared with placebo, and paracetamol 600/650 mg had an NNT of 5.3. When paracetamol 600/650 mg was combined with codeine 60mg, the NNT was reduced to 3.6. The authors concluded that the addition of codeine 60mg to paracetamol produces additional pain relief but is accompanied by an increase in drowsiness and dizziness [19].

When a lower dose of codeine (30mg) is used, the incidence of side effects is reduced. Macleod and colleagues conducted a randomised, double blind trial to compare the efficacy and safety of paracetamol 1g alone with paracetamol 1g combined with codeine 30mg for relief of pain following surgical removal of impacted third molars. The authors found no significant difference between the two groups in the proportion of subjects experiencing adverse events. The results also showed that paracetamol 1g with codeine 30mg was significantly more effective in controlling pain for 12 hours following third molar removal [20].

Based on available evidence from randomised controlled trials and systematic reviews, post-operative pain following oral surgical procedures may be best managed with a NSAID, unless otherwise contraindicated, followed by the addition of paracetamol or a compound analgesic. The aim of the clinical audit was to investigate the post-operative pain experience of patients undergoing oral surgery under day case general anaesthesia where we have adopted such an analgesic protocol and to compare the results with other centres as reported in the literature.

The objectives were to investigate the pain experienced by day case patients following oral surgery at two time points, type of analgesia provided, satisfaction of analgesia provided and overall satisfaction of pain relief. The study was registered with the Central Manchester University Hospitals NHS Foundation Trust Audit office.

Methods

Patient selection

All ASA I and II patients, aged 16 years and over requiring an oral surgical procedure under day case general anaesthetic were selected. Patients were assessed by an oral surgeon in the first place to ascertain the surgery required and the suitability for day case general anaesthesia. These patients were then pre-assessed by a general nurse to ensure all pre-operative documentation and necessary investigations had been carried out. An information leaflet and verbal explanation of the purpose of the study were provided.

Study procedure

All patients over a 3 month period requiring oral surgery procedures under day case general anaesthesia were invited to participate in this audit study. Having read the information leaflet and an explanation of the purpose of the study, patients who agreed to take part in the study gave verbal informed consent. Patients were then given a copy of the pain questionnaire and an explanation of how to complete it using the numerical rating scale.

Patient's demographic and contact details were recorded. General anaesthesia and surgery were undertaken by an anaesthetist and surgeons who regularly operated in the unit. Following recovery from general anaesthesia, the type of oral surgery procedure and discharge prescription was noted. The type and dose of post-operative analgesia prescribed were at the discretion of the surgeons who were not aware of this study. This was to ensure that the surgical technique would be unaltered and the choice of post-operative analgesic prescribed would not be influenced.

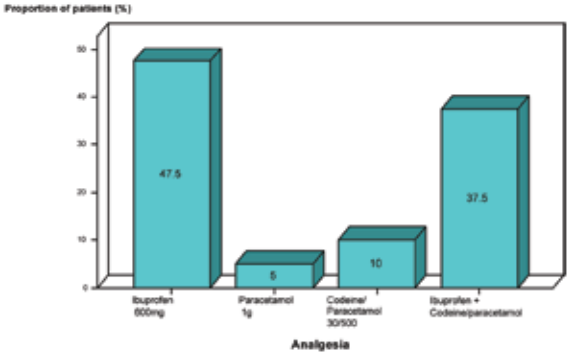
Patients were reminded prior to discharge to complete the pain questionnaire. They were then contacted by telephone 48 hours following surgery at a previously agreed allocated time for data collection. Patients were asked to rate their response to pain at 6 hours and 24 hours on a numerical rating scale of 0 to 10 (0 = no pain and 10 = intolerable pain). Patients were also asked if they were satisfied with the post-operative analgesics provided and to give an overall rating of their pain relief. We also noted if additional medication was required other than that prescribed.

Results

Data from 80 patients was collected. This was the total of all the patients invited over a 3-month period as none refused to participate. No patients were lost to follow up at telephone data collection. There were 32 males (40%) and 48 females (60%) ranging from 16 to 55 years, with a mean age of 30.74 years. The types of procedure performed included multiple dental extractions involving 3 teeth or more, surgical removal of buried or impacted teeth, endodontic surgery, dental implant placement and bone augmentation procedures with intra-oral harvesting sites in preparation for later dental implant surgery.

The proportion of each type of analgesic prescribed as discharge medication for post-operative pain management is shown in Fig. 1. Every patient was prescribed analgesia to take home, with the majority given ibuprofen alone (38, 47.5%) or both ibuprofen and codeine/paracetamol combination (30, 37.5%). The remaining patients had paracetamol alone or codeine/paracetamol combination alone. Only ibuprofen with the strength of 600mg was available for prescription in the unit. Patients' self reported pain intensity scores

Figure 1 Bar chart showing type of analgesic prescribed.



were categorised as follows. This validated data transformation enables a more sensitive analysis [21]:

0 = No pain
1 – 4 = Mild pain
5 – 6 = Moderate pain
7 – 10 = Severe pain

At 6h, 34 patients (42.6%) had moderate to severe pain (Table 1), and at 24h following surgery, there was only a minor reduction in the number of patients with moderate to severe pain.

Table 1 Pain scores at 6h and 24h after surgery.

Pain scores	Number of patients	
	6 hours	24 hours
No pain	12 (15%)	9 (11.3%)
Mild pain	34 (42.5%)	40 (50%)
Moderate pain	21 (26.3%)	15 (18.8%)
Severe pain	13 (16.3%)	16 (20%)

Tables 2 and 3 show the pain scores at 6h and 24h respectively in relation to the type of analgesic prescribed. Forty-seven per cent of patients who were prescribed ibuprofen 600mg alone had moderate to severe pain at 6 hours and 44.7% at 24 hours post-operatively.

In the group who were prescribed combination of ibuprofen and codeine/paracetamol combination to take home, 36.7% had moderate to severe pain at 6h and 30% at 24h.

Table 2 Pain scores and type of analgesic prescribed at 6 hours.

Analgesic	Number of patients			
	No pain (0)	Mild pain (1 to 4)	Moderate pain (5 to 6)	Severe pain (7 to 10)
Ibuprofen 600mg	4	16	11	7
Paracetamol 1g	1	2	0	1
Codeine/paracetamol 30/500	1	3	1	3
Ibuprofen + codeine/ paracetamol	6	13	9	2
Total	12	34	21	13

Table 3 Pain scores and type of analgesic prescribed at 24 hours.

Analgesic	Number of patients			
	No pain (0)	Mild pain (1 to 4)	Moderate pain (5 to 6)	Severe pain (7 to 10)
Ibuprofen 600mg	3	18	7	10
Paracetamol 1g	1	2	0	1
Codeine/paracetamol 30/500	1	3	2	2
Ibuprofen + codeine/ paracetamol	4	17	6	3
Total	9	40	15	16

Patients were asked if additional analgesics were required other than those prescribed and 13 patients (16%) reported using additional non-prescribed analgesics to manage their pain. Of these 13 patients, the majority (10 patients) were in the group given ibuprofen alone (Table 4).

Table 4 Additional analgesics for pain relief.

Analgesic	Additional pain relief medication		Total
	No	Yes	No
Ibuprofen 600mg	28	10	38
Paracetamol 1g	4	0	4
Codeine/paracetamol 30/500	7	1	8
Ibuprofen + codeine/ paracetamol	28	2	30
Total	67	13	80

Patients were asked whether or not they were satisfied with the prescribed analgesics in managing postoperative pain. Despite a high proportion of patients having moderate to severe pain, 71 patients (89%) reported satisfaction with their pain relief. The satisfaction about prescribed analgesics is shown in Table 5.

Table 5 Patient satisfaction about prescribed analgesics.

Drugs	Satisfaction of pain relief	
	No	Yes
Ibuprofen 600mg	6	32
Paracetamol 1g	1	3
Codeine/paracetamol 30/500	1	7
Ibuprofen + codeine/ paracetamol	1	29
Total	9 (11%)	71 (89%)

Patients rated their overall satisfaction about pain relief on a numerical rating scale (0 = totally unsatisfied and 10 = excellent). Patient self report satisfaction was categorised as follows:

0 = totally dissatisfied
1 – 4 = dissatisfied
5 – 7 = satisfied
8 – 10 = excellent

The results are shown in Table 6. Seventy percent of patients rated their pain relief as 'excellent'.

Table 6 Overall rating of pain relief

Analgesic	Number of patients		
	Dissatisfied (1 to 4)	Satisfied (5 to 7)	Excellent (8 to 10)
Ibuprofen 600mg	2	15	21
Paracetamol 1g	1	0	3
Codeine/paracetamol 30/500	1	1	6
Ibuprofen + codeine/ paracetamol	1	3	26
Total	5 (6%0	19 (23.7%)3	56 (70%)

Discussion

This study investigated the post-operative pain experienced by patients following oral surgery under day case general anaesthesia. We were disappointed to find 42.6% of patients experiencing moderate to severe pain at 6h after surgery and that this had reduced little at 24h. This finding was despite our prescription of ibuprofen, paracetamol and codeine according to the best research evidence and was no better than has been reported by other authors. Regardless of the quality of the intervention, pain following oral surgery may never be completely eliminated, but it should be minimised as much as possible. It has been suggested that the standard to strive for is for patients to experience post-operative pain that is not greater than mild in severity [10]. Other authors have reported similar results to us [22] or worse [23]. Our study recorded dispensed analgesics but made no attempt to check compliance of dosing. It may be that patients did not take the medication as recommended. Our verbal instructions are for patients to take analgesics regularly for 24h rather than on a "when necessary" basis. Patients may have taken medications only when necessary or not at all. Pain after the surgical removal of wisdom teeth is reported to peak at the first 12 h and therefore we were surprised that the severity of pain was diminished very little at 24h [24]. However, the patients in this study were undergoing procedures other than the surgical removal of wisdom teeth alone. Some patients reported no pain and this is likely to be because they were undergoing only simple surgery but required general anaesthesia because of their level of anxiety or lack of co-operation.

One study has investigated whether pre-packaged analgesics results in better compliance and improved post-operative pain relief. The authors found no significant difference in pain intensity between the group requiring analgesics at the discretion of the surgeon and those requiring the pre-packaged analgesics [25], although others have shown significant reduction in pain intensity using pre-packaging. This practice also has the advantage of reducing the risk of overdose [26].

It is often difficult to measure patient satisfaction. In this study, patients were asked about whether they were satisfied with the prescribed take home analgesic in managing their post-operative pain. In addition, they also gave an overall rating of satisfaction about their pain relief. Despite a large number of patients experiencing pain above the level of moderate pain, the majority were satisfied with the analgesics prescribed. The pattern and frequency of analgesic consumption varies depending on individual's pain threshold and most tend to consume analgesics only as required. Patient education may therefore be a requirement for improving the pain experience after surgery.

Overall, only 16% of patients required additional self-prescribed analgesics. This is much lower than the findings of McHugh and Thoms who found a high proportion of patients (43%) had to obtain additional analgesics to those prescribed following discharge from day case surgery [7]. In this study all patients were discharged with analgesics to take home but the choice of analgesic varied according to the surgeon's opinion of the anticipated patient post-operative pain. This may have been influenced by the complexity of surgery, time of surgery, and other factors such as knowledge, experience and attitudes. Improving patients' post-operative pain experience may therefore require staff education. The group who were prescribed ibuprofen only had the highest incidence of additional self-prescribed analgesic requirement. The results suggest that ibuprofen alone as take home analgesic may not be sufficient and patients would benefit from a broader spectrum of analgesic which include a combination of NSAID and a compound analgesic. We do have a departmental protocol for the type of analgesia to prescribe according to anticipated pain severity but protocol adherence may not have been ideal even if anticipated pain appropriately determined. It was however good that most patients received a NSAID and a range of analgesics.

The overall rating of patient satisfaction with pain relief was high despite a large proportion reporting moderate to severe pain at 6h and 24h. This finding is similar to that of previous studies [7, 12, 27]. The discrepancy may be due to different dimensions of patient satisfaction being measured with patients reporting satisfaction with care by staff [28]. This paradoxical relationship between patient satisfaction and pain severity suggests that general satisfaction questions should not be used in isolation as they are unreliable [29].

Conclusion

Despite a departmental recommendation of prescribed systemic analgesia based on best research we found that an unacceptably large proportion of patients experienced moderate to severe pain after day case oral surgery under general anaesthesia at 6h and 24h. Strategies need to be considered to improve the patient experience. These may include patient and staff education, consideration of the routine use of a wider spectrum of analgesics and interventions to minimise onset of pain with pre-emptive or protective analgesia.

Acknowledgments

We wish to thank everyone at the Oral Surgery Day Case Unit, Manchester Royal Infirmary for making this study possible.

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Grade 3 haemorrhoidal treatment: rubber band ligation or haemorrhoidectomy – a prospective study

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Abstract

Aim: There is some controversy over which treatment should be used for grade 3 haemorrhoids. With the aim of assessing the efficacy of rubber band ligation to treat grade 3 haemorrhoids this treatment was compared to Milligan/Morgan haemorrhoidectomy.

Methods: A prospective, analytical, observational and descriptive study was performed on all patients diagnosed with symptomatic grade 3 haemorrhoids between September 2007 and December 2008. Patients were assigned to each group according to whether or not they presented an external component. Treatment was by Milligan/Morgan haemorrhoidectomy or rubber band ligation respectively. Pain and analgesic requirements were assessed during the first 7 days post-operatively. The degree of resolution of the symptoms, the degree of satisfaction and the days off work were recorded.

Results: Statistically significant differences were observed between the 2 groups as to post-operative pain and analgesic requirements. Both variables were greater in the group of patients treated by haemorrhoidectomy. There was a statistically significant difference between the 2 groups as to days off work.

Conclusion: The results show that rubber band ligation is effective for treating grade 3 haemorrhoids and the few complications and slight post-operative pain enable us to recommend it as the procedure of choice for the management of this condition as it is the safest treatment that enables the patient to recover quickly.

Keywords: Rubber band ligation; Haemorrhoidectomy; Haemorrhoids.

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Introduction

Haemorrhoid-related pathology frequently affects a broad group of the population and causes a variety of symptoms; notably pain, rectal bleeding and pruritus. A variety of techniques have been developed to treat the pathology according to the degree of haemorrhoid presentation. These include methods such as rubber band ligation, photo-coagulation, sclerotherapy, cryotherapy [1] and various haemorrhoidectomy and stapled haemorrhoidoplexy techniques. Surgery is reserved for patients with grade 4 haemorrhoids and for patients in whom non-surgical treatment has failed or those who suffer from external symptoms such as external hemorrhoids or cutaneous flaps. Rubber band ligation has been shown to be the most effective method for treating grade 2 haemorrhoids. However, there is more controversy over the treatment of grade 3 haemorrhoids. Currently, less invasive, less painful procedures tend to be carried out and lead to quick recovery. With these aims, various scientific articles have been published in which rubber band ligation is applied to grade 3 haemorrhoids.[2,3] Because of this, we commenced treatment of grade 3 haemorrhoids with rubber band ligation in our department and we report the following study where we assessed its results by comparing this treatment with haemorrhoidectomy.

Material and Methods

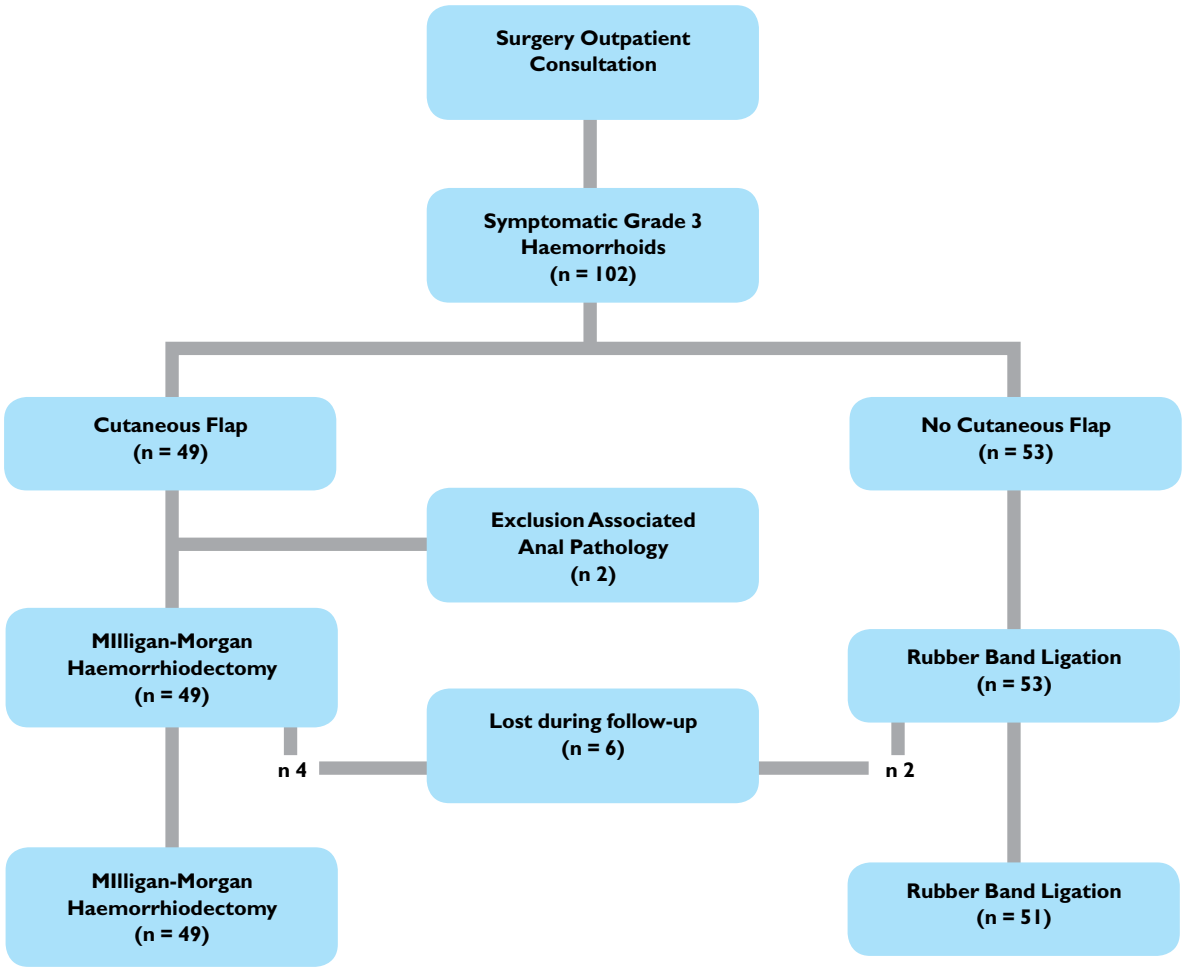
We performed a prospective, analytical, observational, and descriptive study of 94 patients diagnosed with grade 3 haemorrhoids who were symptomatic between September 2007 and December 2008. Patients were diagnosed in the general surgery outpatient department where the procedure they were going to be subject to was explained and where they were issued with informed consent forms. Patients were divided into 2 groups—those treated by Milligan-Morgan haemorrhoidectomy and those treated by rubber band ligation. (Figure 1)

The technique performed was chosen depending on the presence of a cutaneous flap. Thus, we performed Milligan-Morgan haemorrhoidectomy with Ligasure Max® (Covidien®) for patients with an external component and rubber band ligation for the remainder. The first group required spinal anesthesia for the operation whereas the second group did not.

All patients were operated on in the same theatre in the outpatient major surgery department. The immediate post-operative period was monitored in the recovery area of the outpatient major surgery department. Upon discharge, all patients were issued a questionnaire to record pain levels during the first 7 post-operative days by means of an analog scale in addition to daily analgesia requirements. Patients who underwent Milligan-Morgan haemorrhoidectomy were administered endovenous analgesia during the first 48 hours post-operatively by means of an elastomeric pump. As of the second day post-operatively, the elastomeric pump was removed and oral analgesic was commenced. This consisted, just as with the group treated with rubber band ligation, of ketorolac every 8 hours and tramadol on demand. Patients treated with rubber band ligation only received oral analgesia on demand.

The questionnaire issued to patients covered the initial post-operative observation in the outpatient department one week following the operation. At this initial observation we administered a verbal survey

Figure 1 Patient Distribution.



which considered aspects such as control of symptoms, onset of complications, days off work, and the degree of patient satisfaction. This verbal survey, together with physical examination, was repeated in all successive observations for patients until full resolution of symptoms at a follow up time of one year. These data were recorded in a data collection sheet.

Patients who presented associated anal pathology and those who did not meet the criteria to be included in the major outpatient surgery programme were excluded from the study.

Statistical Analysis

We performed a statistical or descriptive analysis using mean and standard deviation for quantitative variables and absolute and relative frequencies for categorical variables. We used the Mann-Whitney U non-parametric test for quantitative variables and the λ^2 or exact Fisher test for categorical variables. To assess the variation in the time pain lasted and the analgesia that was required the two-way ANOVA test was used. Statistical significance was considered for $P<.05$. We performed a statistical analysis with the SPSS programme version 11.

Results

We excluded 8 patients from the study; 2 patients because they presented associated anal pathology and we lost 6 patients during follow-up. Of all 94 patients included in the study 51 were treated by rubber band ligation and 43 by Milligan-Morgan haemorrhoidectomy.

We observed a statistically significant difference in favour of women in the group treated by haemorrhoidectomy. The distribution of prior symptoms referred by patients was homogeneous in both groups.

We observed statistically significant differences as to post-operative pain reported by patients between the 2 groups. The pain reported by patients subjected to haemorroidectomy was clearly greater except on the day of the operation when differences were not statistically significant (Table 1).

Table 1 Post-procedure related pain.

Day	Rubber Band Ligation Pain		Haemorrhoidectomy Pain		Statistical Level
	Mean	SD	Mean	SD	P
Day 0	3'69	2'27	4'06	3'04	0'7
Day 1	2'55	1'80	3'64	2'20	< 0'0001
Day 2	1'94	1'66	4'88	2'67	< 0'0001
Day 3	1'55	1'18	6'68	1'93	< 0'0001
Day 4	1'34	1'00	6'42	2'25	< 0'0001
Day 5	1'25	0'99	5'53	2'24	< 0'0001
Day 6	1'19	0'76	4'84	2'16	< 0'0001
Day 7	1'11	0'41	3'93	1'74	< 0'0001

The results obtained were virtually superimposable by assessing requirements for analgesia during the first week post-operatively and we observed statistically significant differences between the 2 groups. The analgesia required in the group of patients treated by haemorroidectomy, except during the day of the operation, was clearly greater (Table 2).

Table 2 Post-procedure required analgesia.

Day	Rubber Band Analgesia		Haemorrhoidectomy Analgesia		Statistical Level
	Mean	SD	Mean	SD	P
Day 0	0'97	0'97	1'22	1'64	0'6
Day 1	0'75	1'27	2'15	2'26	≤ 0'0001
Day 2	0'46	1'21	3	2'07	≤ 0'0001
Day 3	0'30	0'90	3'46	2'04	≤ 0'0001
Day 4	0'21	0'79	3'40	2'40	≤ 0'0001
Day 5	0'15	0'60	3'15	2'49	≤ 0'0001
Day 6	0'13	0'58	2'60	2'04	≤ 0'0001
Day 7	0'11	0'41	1'75	1'78	≤ 0'0001

As for the onset of post-operative complications it is notable that 79% of patients did not report complications. The low percentage of complications observed was distributed homogeneously between the 2 groups; 7 patients reported rectal bleeding (3 in the rubber band ligation group and 4 of those treated by haemorrhoidectomy), 5 anal pain (3 in the rubber band ligation group and 2 in those treated by haemorrhoidectomy), 2 prolapse (in the rubber band ligation group), 1 acute retention of urine (post-haemorrhoidectomy), and 2 anal stenosis (in the group treated by haemorrhoidectomy).

We assessed monitoring of symptoms during post-operative follow up; 93.6% of patients referred full remission and significant improvement in symptoms. Among these, 58 patients (61.7%) reported full remission of symptoms of which 66.7% were in the rubber band ligation group and 55.8% in the haemorrhoidectomy group. It is notable that neither of the 2 groups reported no improvement in symptoms and that 11.8% of patients from the rubber band ligation group reported a relative improvement in symptoms. (Table 3)

Table 3 Systems improvement after analgesia.

Symptoms Control	Rubber Band Ligation	Milligan-Morgan Haemorrhoidectomy	Total
No Improvement	0	0	0
Relative Improvement	6 (11.8%)	0	6 (6.4%)
Significant Improvement	11 (21.6%)	19 (44.2%)	30 (31.9%)
Full Remission	34 (66.7%)	24 (55.8%)	58 (61.7%)
Total	51 (100%)	43 (100%)	94 (100%)

We observed statistically significant differences between the 2 groups as to days off work; this was 28.8 days in the group treated with haemorrhoidectomy and 1.3 days in the case of rubber band ligation.

We gave a survey on the degree of satisfaction to all patients with outpatient surgery consultations and we observed that 53 patients stated they were very satisfied with the treatment, of which 32 were patients treated by rubber band ligation and 21 treated by haemorrhoidectomy. The remaining 36 patients stated they were satisfied of which 15 belonged to the rubber band ligation group and 21 to the haemorrhoidectomy group. No patient stated they were not very satisfied or dissatisfied.

Discussion

The presence of various techniques to treat haemorrhoid-related pathology reveals that there is no technique which is better, in spite of the multiple randomized studies performed by comparing the various techniques.[4] Milligan-Morgan haemorrhoidectomy described in 1937 continues to be widely performed today with minor modifications and especially for advanced haemorrhoids due to the fact that it is an effective technique, although associated with intense post-operative pain and some latent complications. Rubber band ligation is also broadly disseminated as a treatment for lower grade haemorrhoids. It is safe, involves less post-operative pain, and entails a quick recovery. There is controversy over the recidivism of haemorrhoids post-ligation, especially grade 3 haemorrhoids with indices which vary from 4% to 80%,[5] although articles have recently been published which advocate the safety of rubber band ligation[3,6,7] based on both resolution of presenting symptoms, absence of repeat treatment, and also the satisfaction reported by patients and the time before returning to work.

Because haemorrhoid-related pathology is a benign disease, we believe we should always try the least aggressive and safest procedure which enables quick recovery of the patient. For this reason, we decided to perform rubber band ligation on patients with grade 3 haemorrhoids. The study was not randomized because patients with haemorrhoid-associated cutaneous flaps or external component requested their removal and we therefore performed Milligan-Morgan haemorrhoidectomy on these patients; it was possible to remove them within the same haemorrhoidectomy wound. Both procedures were performed without hospital admission, in the same theatre, with the aim of reducing inter-group differences and based on the fact that we have performed haemorrhoidectomy without admission since 1998 with replacement indices of 95%. With the same aim of maintaining as much homogeneity of the groups treated, only patients with grade 3 haemorrhoid pathology were included.

Just as for the latest studies by Shanmugam et al., and Forlini et al., we have chosen as evidence of the efficacy of the treatment the resolution of symptoms reported by patients as they are the reason for attending for consultation and is what alters their quality of life.[6,3] Therefore, we see in our study that there are no significant inter-group differences with regard to symptoms reported initially which enables us to ensure that they are groups comparable between themselves.

The efficacy of both treatments has been proven in this study by observing that only 2% of patients required repeat treatment and that 93.6% were symptom-free upon completion of treatment in both groups without statistically significant differences between them. The current literature describes a rate of 20% for second ligation sessions in the first month as correct.[8,9[

The most significant differences found were with regard to post-operative pain. We attribute similar figures for pain reported by

the 2 groups on the day of the operation to discomfort reported by patients and which are reduced in the haemorrhoidectomy group thanks to the endovenous analgesia pump. Forlini also described 46% of patients reporting pain during the first 24 to 48h post-ligation which is attenuated with sitz baths and analgesia. During the first post-operative day the differences in pain reported are statistically significant between the 2 groups in a more manifest way after 48 to 72h when endovenous analgesia was withdrawn from the haemorrhoidectomy patients; this frequently coincides with the first bowel movement.

Similar to figures observed for post-operative pain, statistically significant differences were detected for the ingestion of analgesia. It is notable that patients treated with rubber band ligation virtually did not require analgesics.

Performing a haemorrhoidectomy with Ligasure is a safe method which does not involve bleeding and is reported to cause less pain than other exeresis techniques.[10] In any case, in the light of these results and as observed in various comparative studies published, we consider that the existence of pain is more related to whether or not there is a surgical wound rather than different treatment instrumentation.

A highly appreciated factor in the wellbeing of the patient is time off work and in our study the result obtained was very notable; we observed that patients treated by haemorrhoidectomy required a mean of 30 days off work and patients treated with rubber band ligation could go back to work immediately.

The fact that the study was not randomized may be a limitation of the study. This is conditioned by the existence of patients with cutaneous external pathology who must undergo surgery; however, the clear homogeneity of the groups and the high statistical significance together with the broad value of the sample helps us to accept the results obtained.

Various publications have insisted that the possibility of recidivism is the main problem in the medium-long term after rubber band ligation.[11,12,13,14] For this reason we extended the follow-up of patients for a post-operative year even though they were healed before this. The latest publications describe groups in which 80% to 90% of patients are symptom-free after 2 years.[3,7,15,16] These figures coincide with what we observed in our study just as we emphasise that a broad ligation of the three haemorrhoidal packets is necessary.

The few complications observed indicate that both treatments are safe procedures to manage haemorrhoids.

In light of the results obtained together with the high degree of satisfaction revealed by patients we conclude that rubber band ligation is effective for the treatment of grade 3 haemorrhoids and the few complications and little post-operative pain enables us to recommend it as the procedure of choice for the management of this condition.

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Discussion

This study investigated the post-operative pain experienced by patients following oral surgery under day case general anaesthesia. We were disappointed to find 42.6% of patients experiencing moderate to severe pain at 6h after surgery and that this had reduced little at 24h. This finding was despite our prescription of ibuprofen, paracetamol and codeine according to the best research evidence and was no better than has been reported by other authors. Regardless of the quality of the intervention, pain following oral surgery may never be completely eliminated, but it should be minimised as much as possible. It has been suggested that the standard to strive for is for patients to experience post-operative pain that is not greater than mild in severity [10]. Other authors have reported similar results to us [22] or worse [23]. Our study recorded dispensed analgesics but made no attempt to check compliance of dosing. It may be that patients did not take the medication as recommended. Our verbal instructions are for patients to take analgesics regularly for 24h rather than on a "when necessary" basis. Patients may have taken medications only when necessary or not at all. Pain after the surgical removal of wisdom teeth is reported to peak at the first 12 h and therefore we were surprised that the severity of pain was diminished very little at 24h [24]. However, the patients in this study were undergoing procedures other than the surgical removal of wisdom teeth alone. Some patients reported no pain and this is likely to be because they were undergoing only simple surgery but required general anaesthesia because of their level of anxiety or lack of co-operation.

One study has investigated whether pre-packaged analgesics results in better compliance and improved post-operative pain relief. The authors found no significant difference in pain intensity between the group requiring analgesics at the discretion of the surgeon and those requiring the pre-packaged analgesics [25], although others have shown significant reduction in pain intensity using pre-packaging. This practice also has the advantage of reducing the risk of overdose [26].

It is often difficult to measure patient satisfaction. In this study, patients were asked about whether they were satisfied with the prescribed take home analgesic in managing their post-operative pain. In addition, they also gave an overall rating of satisfaction about their pain relief. Despite a large number of patients experiencing pain above the level of moderate pain, the majority were satisfied with the analgesics prescribed. The pattern and frequency of analgesic consumption varies depending on individual's pain threshold and most tend to consume analgesics only as required. Patient education may therefore be a requirement for improving the pain experience after surgery.

Overall, only 16% of patients required additional self-prescribed analgesics. This is much lower than the findings of McHugh and Thoms who found a high proportion of patients (43%) had to obtain additional analgesics to those prescribed following discharge from day case surgery [7]. In this study all patients were discharged with analgesics to take home but the choice of analgesic varied according to the surgeon's opinion of the anticipated patient post-operative pain. This may have been influenced by the complexity of surgery, time of surgery, and other factors such as knowledge, experience and attitudes. Improving patients' post-operative pain experience may therefore require staff education. The group who were prescribed ibuprofen only had the highest incidence of additional self-prescribed analgesic requirement. The results suggest that ibuprofen alone as take home analgesic may not be sufficient and patients would benefit from a broader spectrum of analgesic which include a combination of NSAID and a compound analgesic. We do have a departmental protocol for the type of analgesia to prescribe according to anticipated pain severity but protocol adherence may not have been ideal even if anticipated pain appropriately determined. It was however good that most patients received a NSAID and a range of analgesics.

The overall rating of patient satisfaction with pain relief was high despite a large proportion reporting moderate to severe pain at 6h and 24h. This finding is similar to that of previous studies [7, 12, 27]. The discrepancy may be due to different dimensions of patient satisfaction being measured with patients reporting satisfaction with care by staff [28]. This paradoxical relationship between patient satisfaction and pain severity suggests that general satisfaction questions should not be used in isolation as they are unreliable [29].

Conclusion

Despite a departmental recommendation of prescribed systemic analgesia based on best research we found that an unacceptably large proportion of patients experienced moderate to severe pain after day case oral surgery under general anaesthesia at 6h and 24h. Strategies need to be considered to improve the patient experience. These may include patient and staff education, consideration of the routine use of a wider spectrum of analgesics and interventions to minimise onset of pain with pre-emptive or protective analgesia.

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Day surgery treatment of lumbar disc herniation: is it worthwhile?

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Abstract

Aim: This retrospective study analyses our practice in the treatment of lumbar disc pathology as a day case procedure.

Methods: We analyzed 87 consecutive cases performed in the Ambulatory Surgery Unit, of Centro Hospitalar do Porto between January, 2001 and December, 2008. Clinical, anaesthetic and surgery issues were studied.

Results: The unanticipated admission rate was 3.4%. Seventy-five per cent of our patients declared "great satisfaction" and 82.5% recovered and went back to their normal professional activity after surgery. No patient needed readmission within 24h post-operatively.

Conclusion: Day case treatment of lumbar disc herniation is a safe procedure. Careful patient selection and an experienced team are key factors for the success of this surgical programme.

Keywords: Lumbar disc herniation; Day surgery lumbar microdiscectomy; Outcomes.

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Introduction

Some neurosurgery pathologies and procedures, only seen before in the inpatient setting, have been introduced lately into ambulatory surgery unit (ASU) practice. Modern microsurgery techniques and anaesthesia allow less aggressive surgery, with faster recovery. Ambulatory surgery (AS) brings great advantages for all national health services: time reduction in hospitalization; less risk of infection and thromboembolism problems; fast recovery and substantial cost saving.s [1] Spine microsurgery is a safe and effective technique for disc pathology. ASU success relies on good infrastructure, with a well planned logistic and professional design, an experienced multidisciplinary team and proper patient selection.

Symptomatic lumbar disc herniation prevalence in the adult population is about 2%. [2] This percentage makes it important to optimize resources in its treatment. Day case lumbar microdiscectomy (LM) was first described by Herbet *et al* [3] in 1988. Different studies show microdiscectomy as a safe and efficient method being the gold-standard [4] treatment for this pathology. The presence of lumbar stenosis or osteophytes along with some other situations that can necessitate a longer post-operative period may complicate the procedure. Thus these cases must be avoided for day case treatment. [4]

LM is one of the most frequent procedures practiced in the USA; over 250.000/year [5] and nearly 8% of these are operated on as day cases. In Europe, that incidence varies a lot, being more representative in the region of Veneto, in Italy, with 9.5%. In Portugal only a few hospitals perform this procedure on a day surgery basis but this represented an already significant 6.1% of the whole lumbar discectomies performed all over the country in 2006. [6]

An ASU with admission criteria protocols, an experienced multidisciplinary team and the appropriate equipment, such as a surgical microscope, is essential for the success of this type of programme. Our ASU considers clinical, social and logistic criteria in the selection of patients.

Material and Methods

Ninety-six consecutive patients were retrospectively reviewed between 1st January 2001 and 31st December 2008. Nine of them were excluded because of a lack of important information. All 87 LMs were performed in the ASU of Centro Hospitalar do Porto (CHP, EPE).

A record card was filled in for every patient. Different items were considered: epidemiologic parameters (sex, age, co-morbilities, toxic habits, weight, height and educational level), clinical parameters (aetiology, disc pathology level, period the pathology had been present, previous diagnosis methods and analgesia), surgical parameters (technique, time length, afflicted level, type of herniation, intra- or post-operative complications, home discharge criteria, unanticipated admission, post-operative recovery time, satisfaction level and need of being re-operated), and anaesthetic parameters (ASA classification; anaesthesia technique, time length, analgesic and anti-emetic treatment, intra- and post-operative complications, recovery time in the Post Anaesthetic Care Unit (PACU). Sixty-four of the 87 patients (73.6%) answered a telephone call made in March, 2009 in order to obtain additional information.

This study was authorized and allowed by the local ethics committee according to the Helsinki declaration of principles. All patients included in the project gave their informed consent during their phone calls.

Results

Forty-six per cent of the patients were male and 38% were aged between 50 and 60 years (Table 1). Almost half of the patients were healthy based on ASA criteria, the most frequent co-morbilities being obesity, depression and peptic pathology.

The evolution period of disease was less than a year in 65% of these patients. The most frequent lumbar level was L5–S1 followed by

Table 1 Epidemiologic parameters.

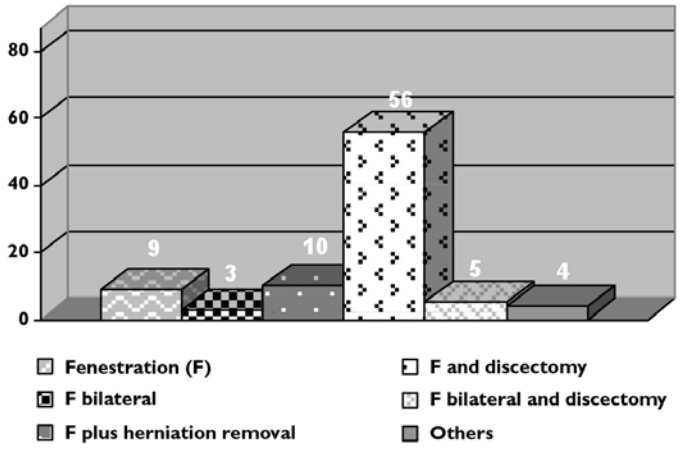
Number of patients	N = 87	
Sex	40 M / 47 F	
Age	39.8 years old	(20–67)
ASA	I 43 II 43 III 1	(49.4%) (49.4%) (1.2%)
Smokers	18 smokers	(20.6%)
Time of evolution	<6 months 35 6–12 months 19 >12 months 29	(42%) (23%) (35%)
Discopathy level	L3–L4 1 L4–L5 31 L5–S1 47 Multilevel 8	(1.2%) (35.6%) (54%) (9.2%)
Type of herniation	Protruded 30 Extruded 44 Sequestred 13	(34.4%) (50.5%) (14.9%)
Pre-operative analgesic scale (OMS)	I 44 II 39 III 4	(50.6%) (44.8%) (4.6%)

L4–L5. The surgery time lasted less than two hours in 95.4% of the cases. The most frequent surgical technique was the unilateral approach with discectomy (41.3%).

The anaesthetic time was less than three hours in 93.1% of the cases. Balanced general anaesthesia was used in 74.7% and total intravenous anaesthesia (TIVA) in 25.3%. No intra-operative anaesthetic complications were recorded.

There was a variety of procedures performed as well as the main LM (Fig. 1). We should highlight a case of bilateral opening and herniation removal which was associated with the placing of an inter-spinous retractor (Vicking). The variable "others" comprised three cases of an extra-foraminal approach and one discectomy case by endoscopy.

Figure 1 Surgical procedures.



We do not use pre-incision infiltration at our hospital, but 69% were on Ropivacaine® 0,2% infiltration before the closing of the operative wound. Also, it is important to note that 18.3% of patients received epidural corticosteroids; 67.6% antifibrotics and 13.7% no drug (Table 2).

The average time in the PACU was about six hours and 90.6% of patients were discharged home with 10 points in the PADSS (post

Table 2 Drugs before closing.

	Drugs	Percentage
Antifibrótics	Adcon Gel®	22 (25.2%)
	Oxiplex®	29 (33.3%)
	Medishield®	8 (9.1%)
Corticosteroids	Dexametasona	1 (1.2%)
	Metil-Prednisolona	8 (9.1%)
	Solu-Medrol®	7 (8.0%)
Local Anaesthetics	Ropivacaine (0.2%)	60 (69%)

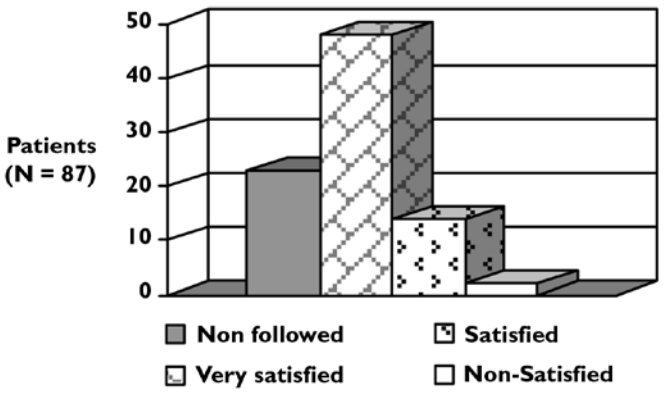
anaesthetic discharge score system). The most frequent post-operative complications were: pain (18.4% of patients needed analgesic supplement treatment) and post-operative nausea and vomiting - PONV (12.6%).

Three patients were not discharged home (3.4%). One was due to a surgical cause (dural tear); another due to anaesthetic complications (pain and adverse effects), and the last due to social reasons (absence of patient escort that day). The dural tear was corrected during the surgical procedure but forced the patient to be laid down for 48 hours in order to prevent any further leak. This patient was discharged after that period without further problems. The second case was caused by intense pain with associated adverse effects (nauseas, vomiting and hypotension). It was a two-level procedure in a patient without any other co-morbilities. The patient was discharged home the day after the procedure.

In the post-operative period, only 26% of patients needed to be followed up for a period longer than six months and 81% were discharged from hospital before the third medical consultation. The great majority (83%) of the patients phoned did not need any continuous long-term analgesic drugs.

The acceptance level grade was classified as "very satisfactory" by 75% of the patients (Fig. 2). Return to work was used also as an indicator of functional recovery. Sixty-four patients were interviewed (73.6%): 53 of them went back to work (82.8%), 6 remained incapacitated (9.4%) and 5 patients were retired or had other limiting co-morbidities (7.8%).

Figure 2 Satisfaction grade.



Discussion

This was a retrospective study looking at data since 2001. This put limitations on the study owing to the lack of information in some clinical files. In fact, we notice an improvement in information in

more recent cases, especially since 2005 when a 24h post-operative phone call began in a systematic way. This phone inquiry is done to evaluate the clinical situation of patients, registering co-morbilities, patient comfort, satisfaction level and functional recovery. This phone call also gives the opportunity to health professionals to give additional information or clarify any doubts that patients or relatives may have.

The quality of an ASU programme is based on low morbidity and high performance efficiency in the different steps of this surgery, involving the experience and technical qualities of health professionals. [4] In our study, 95.5% of the procedures were undertaken by one responsible surgeon with known professional experience. All this is a basic factor to achieve good results.

LM has been demonstrated to be a safe and efficient procedure when it is carried out on a day surgery basis on a selected population. [7] Most morbidity is minor but some adverse anaesthetic effects and surgical complications have been described. [8]These effects [8] may damage the outcome, delay the discharge or cause unplanned overnight admission. Age has not been shown to influence the peri-operative outcome, although increasing age predisposes to significant changes in the intra-operative haemodynamics. [9] Best *et al* [10] describe a low level of complications (2.7%) and unplanned overnight admissions (3.8%), and a very high satisfaction in patients older than 65 years who underwent lumbar surgery. Although we have not included many patients older than 65 years, age is not by itself a patient selection criteria at our ASU, and we have not found any complications related to age.

During anaesthetic induction, prophylactic antibiotic with 2gm of cefazoline was administered to every patient. This practice, although commonly used, still cannot be considered as generalised. [2]

Post-operative adverse anaesthetic effects are a main factor in determining patient discharge home. Some studies show very high scores of pain (33.9%) and PONV (16%). [8] Our results are based on a multimodal approach to pain, guided by our ASU protocol: with paracetamol, 1g, ev, fentanyl, 3 μg/kg, ev, both, on the anaesthetic induction, and ketorolac, 30 mg, ev, at the end of the procedure. Parecoxib, 40mg, ev was used when ketorolac was contra-indicated. Every patient is given a dose of ibuprofen, 400mg, per os, and paracetamol, 1g, per os, during the late recovery, when not contra-indicated. The use of a wide variety of analgesic drugs maximises the beneficial effects of each drug whilst minimising their side effects. Only 18.4% of patients needed supplement analgesic treatment based on fentanyl (ev bolus of 0.025mg in the case of severe pain) and/or tramadol (100mg, ev, when moderate pain).

The use of non-steroidal anti-inflammatory drugs (NSAIDs), mainly ketorolac, and the possibility of surgical haemorrhage has been highlighted in the literature. [8] Later reports, however, refer to the beneficial analgesic effect of NSAIDs without an increase in haemorrhage and state that NSAIDs are safe for use in outpatient surgery. [11] In our ASU, NSAIDs were administered to 72 patients (82.6%) (ketorolac 68.9% and parecoxib 13.7%). Our experience corroborated the safe use of ketorolac. Recently it has been suggested that metamizol [12] (Nolotil®) is a superior and cheaper analgesic for patients undergoing LM when compared to other drugs such as parecoxib or paracetamol. In Portugal, it is rarely used because of the secondary effects described (agranulocytosis).

PONV is a problem in outpatient surgery. [8] PONV prophylaxis is practiced in all our patients and follows a protocol (dexamethasone, 5mg, ev, and droperidol 0.625mg, ev). In spite of this, we had a significant incidence of PONV (12.6%), most probably due to the long time of anaesthesia for these procedures, and the more frequent use of general anaesthesia with nitrous oxide. Probably, if we change our anaesthetic technique for TIVA we might reduce the PONV incidence at our ASU. The appropriate fluid therapy, and the minimization of emetic drugs are also considered. As rescue, ondansetron, 4mg ev, and metoclopramide, 10mg, ev, are administered.

Local anaesthesia has been used to reduce incisional pain. The use of local anaesthetic and its period of time of administration (pre-incision anaesthetic infiltration versus just prior to surgical closing) is controversial. [2,8,13] At our ASU, we just use them before closing the wound, in order to reduce pain in the post-operative period.

The use of corticosteroids in the epidural space is frequent in patients suffering radicular pain and gives good results. [2,13] The efficiency of these drugs during the post-operative period (48 h), the lessening in opioid use, lumbar pain and inferior limb pain, add to the absence of complications such as the surgical injury infection or gastritis, seem to compensate the current lack of evidence for benefits in terms of functional recovery and the general condition of patients in three months. [2,13] Thereby its use in general clinical practice is still variable.

Other adverse effects such as ocular damage (significant complication in non-ophthalmological surgery) or urine retention described in the literature8 were not found in our study.

We had a surgical complication with a case of dural tear (1.1%) that is less frequent than recent reports (3.1%). [2,14] There were two cases of infection which were resolvedby antibiotic treatment. We should also report a surgical level mistake involving a female patient with morbid obesity. This complication can be explained by the unavailable technique of intra-operative fluoroscopy because of the small size of the operating theatre. This type of problems will be overcome shortly with the building of a new ASU in a better and wider architectural design that will allow us to use that radiology equipment. We must highlight that none of the procedures named as "others" in Figure 1 presented any complication, thus we can suggest the apparent safety of these techniques.

We did not find any of the major complications described in the literature. A review of complications in lumbar discectomy shows a low rate of mortality (5.9/10,000) [1] in sepsis situations, pulmonary thrombo-embolism or acute myocardial infarction in the late post-operative period (after 24h post-operatively). In order to avoid a high risk practicing this outpatient procedure, it is very important to recognize them clinically and warn patients about them. [1] Due to these possible complications, authors like Newman [15], question this surgical regimen. In our opinion, keeping the patient monitored the night after surgery does not improve early diagnosis because of the evolution period for the complications. Other important complications of this procedure are major vascular damage, also with a low incidence (1.6/10,000) [1], or urine retention, which must be considered intra- or post-operative promptly.

Our unanticipated admission rate (3.4%) is similar to that found in the literature, with percentages of 0.3–1.4% 8, 4.9% [1] and 7%. [15]

Reviewing the literature, the incidence of recurrence varies from 2 to 18%. [16,17] Although our series trend was the making of aggressive discectomies this point was not isolated for a significant study. Nowadays discussions about the grade of discectomy (limited or agressive) are still ongoing. [17] We are cognisant of the theoretical increase of long term lumbar pain with aggressive discectomy compared with limited discectomy. Thus with this latter technique we can suppose a significant reduction of relapse. A second surgical operation was undertaken in 6 of the 87 patients (6.9%) because of a recurrence of pathology confirmed by radiology. Four of these patients were re-operated on within a twelve months period and the

other two suffered later recurrences.

The evaluation of the patient satisfaction score is a limitation of our study as it is with others. [1] It was not measured using specific objective tests but could be extrapolated considering the clinical reports obtained and the relatively short follow-up time needed. This parameter is considered an important quality reference. Some qualitative studies relate a high satisfaction value from these patients, even though influenced by patients' education level (understanding and expectations) and also their subjectivity. [18] Some others make reference to the significance of pre-operative information (expectations, complications, post-operative care, suitable social setting) for the success of this procedure. [15] In the nineties, the literature showed an outcome of 90–95% for good or excellent results for this surgery. [15] More than 75% of patients showed great satisfaction with this procedure. Three point one per cent of the patients phoned showed dissatisfaction with the day case programme. The fundamental reason was the absence of clinical control by a health professional at home. Besides explanations during the pre-operative examination, a specific written information leaflet on the lumbar disc herniation surgical treatment is given to each patient when discharged home. The leaflet contains explanations on basic questions such as feeding, analgesia, follow-up and clinical contacts, and this seems crucial to increase patient satisfaction. [19]

Conclusion

In adequately selected patients, day case treatment of lumbar disc pathology is a safe procedure. In our study no patient attended the emergency unit in the first post-operative 24 h. Only two patients needed admission to hospital for clinical reasons after the procedure, and there was a great optimisation of beds.

Discerning patient selection and an experienced team are key factors for the success of this surgical programme. The satisfaction rate of the contacted patients was high: 96.8% (satisfied and very satisfied) and 82.8% returned to work. The number of complications is lower than other published series. Most patients had a good recovery period making the follow-up period shorter.

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Country Report: Germany

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The German Association for Ambulatory Surgery called Bundesverband für Ambulantes Operieren (BAO) has recently had some noticeable success:

1. An expert of Oberender of the University of Bayreuth has shown that Ambulatory Surgery is much less expensive than inpatient treatment for the same procedure, and this at equal quality. Switching from inpatient to outpatient surgery would bring savings up to 515 million Euro. (http://www.operieren.de/content/e3472/e7507/e26656/e26658/publication26659/100409OekonomischeBetrachtungdesambulantenOperierens.pdf)
2. The National Association of SHI-Accredited Physicians (Kassenärztliche Bundesvereinigung KBV) together with Bavarian authorities and the BAO has published that according to patient questionnaires of the quality assurance programme AQS1 patients are overwhelmingly content with Ambulatory Surgery and would choose Ambulatory Surgery again if necessary. There were remarkably few complications reported by physicians and patients. (http://www.kbv.de/presse/26306.html)
3. It was shown by evaluation of >500 000 data sets of surgical procedures of the quality assurance programme AQS1 that 14 clinical indicators can routinely be used to reflect quality in surgical units. This programme is used as benchmarking in well over 1000 certified surgical units. (Brökelmann J, Bäcker K. Clinical Indicators for Ambulatory Surgery. Ambulatory Surgery, July 2010)

The only official resistance to perform more Ambulatory Surgery in Germany came from the German Hospital Association (Deutsche Krankenhausgesellschaft DKG). The probable reason is that remuneration for Ambulatory Surgery in hospitals and day clinics alike is only 25% of the corresponding inpatient DRG. So hospitals make 4x more money with conventional inpatient treatment than with Ambulatory Surgery. As prices for procedures for the Statutory Health Insurance Fund (GKV), which serves 90% of the German population, are set by governmental agencies the Federal Government can choose either to pass a new law introducing ambulatory DRGs, which do not exist so far, or to admit higher prices for Ambulatory Surgery in the existing scheme – or, of course, just to sit it out.

The Federal Government which since September 2009 consists of a coalition government of conservatives and liberals is presently working on a Healthcare Reform Act. The problem of the remuneration for Ambulatory Surgery probably will not be tackled by this upcoming reform until the end of this year.

The German Government certainly is in a dilemma: It neither wants to introduce nationalized medicine nor to shift to a free market system. But the European Union is requiring either some form of nationalized medicine or a free market system. Germany so far has lived with a mixture of nationalized and free market medicine called the system of self-government (Selbstverwaltung). But it will be forced to give up self-government sooner or later because of European anti-trust law.

The Proposals of the National Committee for the Development of Day Surgery in Portugal (CNADCA)

*National Committee for the Development of Day Surgery in Portugal**

Abstract

This paper aims to present in a summarised way the conclusions obtained by the National Committee for the Development of Ambulatory Surgery (CNADCA) to identify the main barriers that slowed the expansion of ambulatory surgery (AS) in Portugal, as well as the incentives measures proposed for the promotion of this practice in the hospitals of the National Health Service (NHS). The lack of day surgery units specifically designed for that practice, insufficient human resources (anaesthesiologists and surgeons from certain surgical specialties), and the absence of economic incentive measures were the main constraints found to justify the low percentage of elective surgery performed on a day surgery basis (27%), during the year 2006. Amongst the 45 proposals advanced by the CNADCA for more effective promotion of AS in Portugal, highlights are a 50% reduction of patient fees in relation to AS, free delivery of patient medication for the first post-operative days, assign of several financial and organisational measures seek to continuously improve quality around AS programmes. The CNADCA believes to be possible to achieve the "magic" barrier of 50% of elective surgery performed on a day surgery basis by 2009, if the proposed measures are approved, which would be a decisive goal and an irreversible step forward in the Portuguese Health Policy.

Keywords: Ambulatory surgery in Portugal; Organisation; National Committee; Activity.

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Preface

The Governmental Programme of the XVII Portuguese Constitutional Government stresses the importance of promoting the national development of Ambulatory Surgery, in order to increase effectiveness, quality of healthcare and efficiency in the hospital organization. In spite of the well known advantages of day surgery, this surgical regimen has a reduced rate of implementation in Portugal compared to other European and North American countries [1]. Trying to advance beyond the present reality, the National Committee for the Development of Day Surgery in Portugal (CNADCA) was constituted by Health Ministry Dispatch [2] on the 19th November 2007, with the goals to study and propose a strategy in order to promote the development national-wide of day surgery in the Portuguese National Health Service (NHS).

The mission of CNADCA included:

- identification of physical, human resources or other constraints;
- description of the Day Surgery Unit specific needs, both clinical and administrative organizational;
- specific professional education for day surgery;
- adaptation of informatics systems for specific recording of surgeries performed on a day surgery basis;
- analysis of the financing models and contracts for day surgery activity, and making proposals for its promotion;
- selection of indicators that will allow continuous improving quality in day surgery programmes;
- continuous monitoring and evaluation of day surgery projects in terms of their efficacy, efficiency and quality.

CNADCA was composed of 37 members, centred in an executive committee who coordinated the work and enacted the decisions of the national committee. CNADCA was based in a multi-professional team (doctors, nurses, managers), with representatives from different clinical specialties, coming from all kind of hospitals in terms of its size, legal status, or location, trying to carefully represent the entire country. The National Committee benefited from the support of a Technical Group coming from institutional partners of the Portuguese NHS and a Consultation Body with members representing Nurses (General Nursing Association), Health Regulatory Entity (ERS), and the society itself (Patient Association).

This project had many challenges, many of them from the cultural point of view:

- To remove the indicator hospital "bed" as a basic principle to define the hospital size, complexity and specialization. That is, the distinction and importance of a hospital department is no longer based on its square meter of occupancy or in the number of beds that it has, but in the quantitative, quality and specialization of its production – CHANGE IN THE HOSPITAL PHILOSOPHY.
- To understand the evolution of medicine and to face day surgery without prejudices as the surgery of the future: to consider day surgery, rather than inpatient surgery, the norm for all elective procedures – CHANGE IN CLINICAL PERSPECTIVE
- To face the independence of the day surgery unit (DSU) as a key factor for the success of these programmes with dedicated staff to the project. To understand the central role of nurses in day surgery programmes (humanization, safety and quality), and the need of a careful, professional and motivational selection of this staff. To structurally separate day surgery facilities from inpatient ones and consider this as critical aspect for the success

of the project. It's not enough to practice day surgery: if this isn't performed according to the current legis artis, many benefits will be lost, namely the efficiency and proper management of operating rooms and human resources – A WASTED OPPORTUNITY.

- To institute an empowerment policy around day surgery: recognising health professionals and institutions, their status, and creating benchmarking between hospitals. The acknowledgment of comparison is crucial: it is necessary to recognise the value of day surgery in the professional career, saying that this surgical approach is performed by the best of the surgeons (more experience, higher skill and major responsibility) – THE MAJOR TYPE OF SURGERY FOR THE BEST SURGEONS.
- To realize that technically, day surgery is not a new invention but just an innovation of what is being done in the surgery field. The key-word for the change is Organisation, that should be multidisciplinary and patient centred – A QUALITY ORGANIZATION CENTRED IN THE PATIENT.

This National Committee aimed to publish a comprehensive report where several proposals would be made to the Health Ministry in order to overcome identified barriers that slow the process of implementation of day surgery programmes nationwide. The Committee also aimed to have a national conference to present its conclusions, and to support a media campaign to spread information regarding day surgery amongst the Portuguese society.

By 2009, if the CNADCA proposals will be followed by the Health Ministry, it will be possible to achieve the magic level of 50% of all elective surgery performed on a day surgery basis, which would constitute an important step and an irreversible FORWARD????way in the Portuguese Health Policy.

National ambulatory surgery survey

In order to characterize the actual performance, level of organization, barriers to the development of day surgery in 2006, the first task of CNADCA consisted of doing a national survey involving all hospitals of the NHS. The picture obtained gave a real description of the state of day surgery in Portugal and most of all clarified the constraints, namely logistics, human resources and education, that limits the expansion of AS.

The study included all NHS Hospitals with surgical activity during 2006. Only 10% of these did not have any day surgery programme running at the hospital. Nevertheless, there was a great heterogeneity in the organization itself (separated programmes with dedicated units, total independent; integrated and mixed programmes) most of them without well defined pathways in caring these patients.

In 2006, AS represented 27% of the total elective surgery (i.e., 79,067 procedures), which reflected a 7.7% increase in relation to 2005. However, few institutions used clinical indicators to evaluate the quality of their performance. It seemed that the results found in the national survey justified the creation of such a national committee: the country continued to perform AS at half of the European rates with a deficit of the clinical and organizational criteria internationally recommended for a high quality day surgery practice.

The lack of day surgery units specifically designed for its practice, the insufficient human resources (anaesthesiologists and surgeons from certain surgical specialties), and the absence of incentive economic measures were the main constraints found to justify the low percentage of elective surgery performed on a day surgery basis during the year 2006.

Ambulatory surgery production

In addition to the results obtained through the national survey directly from each Hospital, the CNADCA believed that the official data from the Central Administration of the Health System (ACSS) should be studied and to monitor the main indicators of AS. The 2004-2006 period registered a positive evolution with an increase in the AS rate from 27% in 2004 to 30% in 2006. It should be be noted that the number of procedures resulted in the application of the ACSS criteria for AS based only in time duration of admission, and not in the overall organisation as it was for the data obtained in the national survey. This explains the difference found between both entities: the National Survey (with data from Hospitals), and the ACSS.

From another database (integrated general system for patients registered for surgery – SIGIC) a different result of AS rate was obtained, with only 16% of all elective procedures being performed on a day surgery basis. A difference was also perceptible when information about the fees charged on day surgery patients was obtained according to the division of the hospital requested. In fact, the AS concept varies a lot from the perspective of the professional involved: manager (economic-finance concept), doctor or nurse (clinical concept), or secretariat (administrative concept).

So, there is an urgent need to standardise definitions and informatics systems, in order that all health professionals speak the same language in order to obtain reliable results in the activity of AS.

Considering that AS allows increasing efficiency in maximizing operating room facilities, it is to be expected that when in the presence of higher AS rates, there is lower waiting time for inpatient surgery. Although there was no linear relation between these two factors, there was observed a general relationship with the median of the waiting time for surgery for the extreme values of the AS rates (i.e., hospitals with higher AS rates have lower median waiting time for surgery).

Access to health care services – the waiting list for surgery:

The CNADCA studied the accessibility of patients to our healthcare system, through the surgical waiting list in order to evaluate the dimension of the problem and the evolution during the recent years to analyse the impact of AS in this process.

There has been a reduction in the last two years of the number of patients waiting for surgery (17%). Yet, the most important fact was the reduction of the time waiting for surgery by 50% (median of 8.6 months on the 31st December, 2005 to 4.4 months on the 31st December, 2007).

The maximization of the operating room resources and the presence of common AS procedures on the surgical waiting list, make AS one of the most powerful tools in the reduction of the surgical waiting list. Eight or nine of the surgical procedures top ten on the waiting surgical list, are typical day surgery procedures that represent about 50% of the actual waiting surgical list.

Study about perception and patient satisfaction in ambulatory surgery programmes

In order to understand the satisfaction of health professionals, patients and citizens with AS, the CNADCA made a national survey with the following conclusions:

1. Citizens have heard about AS programmes through the media (44%), patients and relatives (27%), and health professionals, especially general practitioners (22%).
2. The most important advantages of AS programmes are for citizens, the avoidance of the inpatient discomfort (47%), the benefits from being accompanied by a relative (37%) and to speed up the recovering process getting back to the familiar / professional activity (21%).
3. The most important reasons for the citizens to choose the inpatient regimen are the fear of complications after being discharge home (51%) and not have the same conditions at home in regard to those having at hospital (15%).

Knowing the main concerns of citizens we can interact pro-actively trying to avoid them. So, all activities that improve the sense of security, such as written clinical and organizational information regarding the entire surgical process, opportunity to visit to the DSU before surgery, availability of a telephone number contact of the surgical team for the first 24 hours after surgery, and telephone contact by the facility on the day after the surgery, will lead to a reduction of feeling not cared for that could follow patient discharge.

There is a need to explain to patients and relatives that the hospital environment is not as safe as they thought. There are lots of real risks, such as hospital acquired infections and professional mistakes. In contrast, the familiar home environment can be in selected cases more effective for recovery.

The aspects related to the information, clarifying of doubts and the follow-up period after surgery are the most decisive facts in the creation of positive patient opinion. More than 95% of patients in this survey who had had AS were satisfied or very satisfied. When these patients were asked if they would be interested to recover at home if they had another surgical procedure, 88% of patients would answer "Yes". This fact shows the great level of satisfaction among patients that should be maximized: "AS has become a patient right, but a duty of the NHS to provide it".

Planning A Day Surgery Unit (DSU)

Dedicated AS facilities are one of the main constraints identified to explain the reduced presence of AS in Portugal. For that reason, there has been a movement towards the construction of new DSUs.

DSU's model is crucial for improving the efficiency and efficacy of an AS programme. As a result, the CNADCA developed a DSU self-contained unit on the hospital site where operating theatres and ward are dedicated to AS programmes, carefully establishing the independent flow of AS patients, healthcare professionals and goods, and the adequate dimensions of all spaces especially the recovery areas, in order to maximize the through-put in a secure and high quality surgical programme.

Evaluation of the economic viability of a DSU

It was intended to demonstrate before the Administrative Board of Hospitals, Health Regions and the Health Ministry itself, the economic advantages that we should expect from this type of AS programme, in particular when specific dedicated DSU are designed and constructed.

In this analysis, construction costs (for new or renewed facilities), general and medical equipment, human and logistic resources, operational and amortizing costs, versus profits coming from the surgical caseload, where considered. The CNADCA concluded that for any different scenario studied, DSU projects have a positive income with a pay back period of 4 years time, with the model without extended recovery (same day surgery) the best one.

Contracts and financing

The issue of contracts and financing was one of the main limitations identified by CNADCA for AS development. It would be crucial to change this situation, creating at the same time economical incentives for those performing day surgery in comparison to inpatient surgery, but avoiding penalising the latter.

CNADCA proposals for changing the contracts and surgical financing should include:

a) Up to date inclusion of all surgical procedures feasible to be done in AS programmes without economic constraints. The decision of a surgical procedure to be included in these programmes should be based on medical (clinical and social) criteria and not on financing-administrative criteria.

b) Up to date financing for the procedures performed on a day surgery basis, reducing the difference for the amount paid for the same surgery in the inpatient setting.

c) Reducing the surgical bed capacity for admitting patients at hospitals, using this possible constraint as an instrument of cultural change.

d) Increase the weight of ambulatory surgery in programme-contracts in comparison to inpatient surgery.

These proposals are aimed to create an irreversible dynamic changing towards AS among health professionals with a policy based on incentives over 3 years, expecting after that time to have an adequate rate of AS similar to other European NHS.

Moderating fees

The Portuguese NHS is almost completely free for all national citizens. Nevertheless, after 2007 the Portuguese Government established moderating fees for surgical procedures with the purpose to moderate the healthcare expenditure. The application of these fees to AS now corresponds to two days of hospital admission. This decision can be viewed as a driving force against the development of AS, motivating CNADCA to propose a 50% reduction of the fee, corresponding to just to one day of admittance, and reduce the costs transference to patients that could be created when we move from inpatient to AS setting.

Informatics system:

One of CNADCA's goals was to make proposals so that the informatics systems are adequate for the real needs of AS programmes. Results could not be compared because the providers of those data were from different entities. As a result of this, CNADCA proposed a changing in the informatics systems concept, based on:

a) The necessity to clarify the terminology used, separating AS (with or without extended recovery) from the inpatient setting (surgery with admittance, even if this is during a period less than 24 hours) and minor surgery.

b) The necessity to identify from the beginning of the surgical

proposal all the information need to make the registration feasible, namely if the patient has the surgical, medical and social criteria required to be carefully selected to AS programme.

c) The recommendation that certain types of surgery should being inserted by the informatics systems to be performed on a day surgery basis by default, meaning that if not possible the clinician should justify the reason why.

d) The creation of a list of quality indicators to be automatically produced by the informatics system in order be obtained and known easily.

Quality in ambulatory surgery

A major CNADCA goal is to increase the AS rate in the country. However, this goal must be accompanied by an accurate Quality Process with the inclusion of adequate clinical indicators that can demonstrate the security and quality of the programmes. Thus, CNADCA proposed the creation of a list of quality indicators, easy to compare between Health Institutions, to be automatically generated by the informatics systems. These indicators should be available on the website aimed to Hospitals, Health Professionals and Patients, to know how good are the results of each DSU.

CNADCA also recommends the creation of a Quality Manual, Satisfaction Surveys, and in cooperation with the Portuguese Institute of Quality, the establishment of a specific norm for DSU certification.

Education in ambulatory surgery

One of the key elements for the success of AS programmes is the education of well trained and motivated health professionals. CNADCA has identified deficits in the education of health professionals in relation to AS, not only in the pre-graduate level (Medicine or Nurse Degree) but also in the post-graduate level (namely in the curricula of residents) and even among Professionals with many years of practice.

The necessity to explain the day surgery concept and organisation as part of the Faculty of Medicine and Nursery, the inclusion of specific training for this surgical regimen in Internships in Anaesthesiology and Surgical Specialties, and for Specialists without experience in this practice, are central initiatives to overcome the limitations detected in the country. In addition, the education of other groups, including Hospital Managers, General Practitioners and Patient Representative Associations, was regarded as essential initiatives in changing this process.

Visits to public hospitals and the involvement of the media

CNADCA members' visits to public hospitals were considered most relevant for the strategy and the success of its mission. Preliminary results demonstrated that this was an important instrument that led to a significant dynamic progress for the development of AS in our public hospitals.

With these visits, CNADCA came to know hospitals, evaluated hospital management strategies and identified the main constraints for the development of AS programmes. In addition, they learnt of successful programmes, situations of healthcare excellence, and the different solutions implemented. Having the opportunity to promote AS discussions inside the Hospitals motivated health professionals for its practice and stimulated and distinguished those with good practices. These visits were indeed an excellent opportunity to promote amongst the community all the advantages associated to ambulatory surgery, through the media.

CNADCA has visited 37 public hospitals (60% of the public hospitals with surgical activity), being present more than 510 members of their Administrative Board. More than 100 media (newspapers, radio stations or televisions) were represented in these visits, which allowed for the Members of the executive committee to travel over more than 7,250 km.

AS achieved a new dimension and was considered one of the main topics of all the Public Hospitals visited.

Table I Summary of the CNADCA proposals made to the Health Ministry.

Priorities	Measures	Time	Responsables
01. National Survey on Ambulatory Surgery	1. Immediate adoption of basic criteria on AS programmes	1 year	Hospitals
	2. Preparation for adoption of recommendable criteria on AS programmes	1 - 3 years	Hospitals
02. Ambulatory Surgery Production	3. Implementation of a clear registration of all procedures performed on a day surgery basis	2008	ACSS, SIGIC/UCGIC, Hospitals
03. Access to healthcare – surgical waiting list	4. Elected procedures identified by default for AS in the surgical proposal	2008	ACSS, SIGIC/UCGIC, Hospitals
04. Perception of the satisfaction with Ambulatory Surgery	5. Amplification of the visibility of AS	2008	Primary Health Care, Patient Associations, Hospital Friends Leagues, Social Assistant
	6. Reinforcing the receptivity to AS	2008	Hospitals, Observatory Centre of Ambulatory Surgery
	7. Fight barriers against AS	2008	ACSS, Hospitals, Observatory Centre of Ambulatory Surgery
	8. Quality improvement of AS	2008	Hospitals
	9. Monitoring AS development	2008	ACSS, Hospitals, Observatory Centre of Ambulatory Surgery
05. Planning & Designing of a DSU	10. Built or rebuilt day surgery facilities, accordingly the CNADCA proposals methods	1 - 3 years	ACSS, Hospitals
	11. Creation of parking areas for patients and relatives	1 year	Hospitals
06. Evaluation of the economic viability of a DSU	12. Creation of spaces and surgical operating periods for operation to children and adolescents	1 year	Hospitals
07. Contract & Financing	13. Establishment of prices for AS for all DRG codes with inferior limit of 5 days of admittance	2008	Hospitals
	14. Inclusion of Medical DRG codes 316, 317, 369, 465 and 466 for AS	2008	ACSS, ARS, Hospitals
	15. Same price for identical DRG procedures (inpatient or day surgery basis) when inferior limit equal to one day	2008	ACSS, ARS, Hospitals
	16. Establishment of 73,2% of the similar DRG for inpatients, for all DRG with inferior limit below 5 days and above 1 day	2008	ACSS, ARS, Hospitals
	17. Establishment of the inferior limit equal to 1 day of admittance for all DRG with AS price	2008	ACSS, ARS, Hospitals
	18. Payment of the marginal surgical production of AS in the same financing conditions of the basic production	2008	ACSS, ARS, Hospitals
	19. Establishment of the ICM value of the previous year, for the hospital contracts	2008	ACSS, ARS, Hospitals
	20. Reduction of the surgical inpatient beds in a mean value of 5-10%/year, during 3 years	2009-11	ACSS, ARS, Hospitals
	21. Increase in the weight of the AS in the total of elective surgery, in a mean value of 15%/year, during 3 years	2009-11	ACSS, ARS, Hospitals
	22. Creation of a prize of 10% for each AS DRG, during a period of 3 years	2009-11	ACSS, ARS, Hospitals

Priorities	Measures	Time	Responsables
08. Moderated Fees	23. 50% Reduction in the moderate fees applied to AS	2009	Health Ministry
09. Informatics Systems	24. Obstruct the Central Informatics Systems named "SONHO" to accept AS to a procedure coming from an urgent episode	2008	ACSS
	25. Creation in the "SONHO" Informatics System, a sub-speciality dedicated to AS in each Surgical Specialty	2008	ACSS
	26. Allowance of all functionalities of the operating room module of the "SONHO" application without limits or constraints	2008	ACSS
	27. In the operating room module of the "SONHO" application, consider the different types of surgery: Inpatient Surgery (with discharge longer than 24 hours or with short inpatient stay less than 24 hours); AS (with or without extended recovery); Minor Surgery	2008	ACSS
	28. The surgical proposal must identify the necessary information to make the registration feasible, namely if the patient fulfils all the selection criteria: medical and social.	2008	ACSS
	29. Establishment in the "SONHO" Informatics System , the most frequent procedures in AS programmes	2008	ACSS
	30. Identification in the surgical proposal of all pertinent registration data, namely Primary Health Care Centre, General Practitioner and relative responsible for the patient	2008	ACSS
	31. Creation of specific outcomes for AS in the "SONHO" Informatics System, namely: Patient Submitted to Surgery; Failure to Arrive; Cancelled Surgery; Patient Admitted; Patient without surgical indication	2008	ACSS
	32. Inclusion in the "SONHO" Informatics System (Primary Health Care version) and in the "CLINICS" Modules, the possibility of the General Practitioner to send the patient directly to AS programmes	2008	ACSS
	33. Establishment of 3 levels of database in the Informatics System: Hospital, Regional and National	2008	ACSS
	34. Construction of an informatics application exclusive to the AS pathway	2008	ACSS
10. Quality in Ambulatory Surgery	35. Construction of Quality Manuals	1 year	Hospitals
	36. Performance of periodic satisfaction surveys	2008	Hospitals, Observatory Centre of Ambulatory Surgery
	37. Accreditation / Certification of Day Surgery Units	1-3 years	Accreditation Group for Ambulatory Surgery Programmes
11. Education in Ambulatory Surgery	38. Establishment in the Health Colleges (Medicine, Nursing, Hospital Management), modules dedicated to the AS practice	1-3 years	Health Colleges
	39. Creation in the Internship Curricula, educative modules to allow experience in AS	1-3 years	General Medical Association
	40. Development of post-graduated educational programmes for nurses working in day surgery units	1-3 years	General Nursing Association
	41. Implementation of educational programmes to Primary Health Care professionals and social initiatives with Patient Associations	1-3 years	Hospitals, ARS, Patient Associations, Hospital Friends Leagues, Social Assistant

Priorities	Measures	Time	Responsables
12. Suggestions & reclamations	42. Inclusion of AS in the Informatics System "Yes-Citizen"	1 month	Programme "Yes-Citizen" (ACSS or DGS)
13. Monitoring the development of Ambulatory Surgery	43. Creation of the Observatory Centre of Ambulatory Surgery	1 year	DGS
14. Promotion of Ambulatory Surgery	44. Creation of an "Annual Prize" to the most distinguish day surgery unit of the year	1 year	Observatory Centre of Ambulatory Surgery
	45. Establishment of a "National Day for Ambulatory Surgery", where Day Surgery Units should open their organisation to the public, showing the work conditions, and their results		

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2. Portuguese Health Dispatch nº 25 832 / 2007 (Diário da República nº 218, 2ª Série, 17 November).

APPENDIX 1

Table 2 – Constitution of the CNADCA

EXECUTIVE COMMITTEE

- Fernando Araújo, MD, PhD, Vice-President of the Administrative Board of the Northern Regional Health Administration, Public Institute (ARSN-IP), which was the President of the Committee;
- José Gaspar Pais, Phd (Econ), President of the Administrative Board, Centro Hospitalar da Póvoa do Varzim/Vila do Conde, Public Enterprise Entity (EPE);
- Manuel Seca, MD, General Surgeon, Coordinator of Day Surgery Unit, Centro Hospitalar do Porto, EPE;
- Maria Isabel Rocha Macedo, Chief-Nurse of the Operating Room, Centro Hospitalar da Póvoa do Varzim / Vila do Conde, EPE;
- Paulo Lemos, MD, Anaesthetist, Responsible for the Board Committee of the Integrated Centre of Ambulatory Surgery, Centro Hospitalar do Porto, EPE;
- •Silvestre Carneiro, MD, PhD, General Surgeon, Coordinator of Day Surgery Unit, Hospital S. João, EPE;
- Victor Herdeiro, PhD (Law), Member of the Administrative Board, Unidade Local de Saúde de Matosinhos, EPE.

PLENARY COMMITTEE

- Fernando Araújo, MD, PhD, Vice-President of the Administrative Board of the ARSN-IP, which was the President of the Committee;
- Alexandra Costa, Chief-Nurse of the Day Surgery Unit, Centro Hospitalar do Baixo Alentejo, EPE;
- António Castanheira Dinis, MD, PhD, Ophtalmologist, President of the Administrative Board, Instituto Gama Pinto;
- António José Carvalho Capelo, MD, General Surgeon, Director of the General Surgery Department, Centro Hospitalar de Coimbra, EPE;
- Armando Mansilha, MD, PhD, Vascular Surgeon, Hospital São João, EPE;
- Carlos Sousa, MD, General Surgeon, Director of the General Surgery Department, Hospital do Litoral Alentejano;
- Fátima Figueiredo, MD, Anaesthetist, Coordinator of Day Surgery Unit, Unidade Hospitalar de Santo Tirso - Centro Hospitalar do Médio Ave, EPE;
- Francisco José Espinha Ribeiro de Carvalho, MD, Plastic Surgeon, Clinical Director, Hospital Distrital de Santarém, EPE;
- João Bernardes, MD, PhD, Gynaecologist/Obstetrician, Hospital São João, EPE;
- João Manuel Varandas Fernandes, MD, Orthopaedic Surgeon, Director of the Emergency Department, Centro Hospitalar de Lisboa Central, EPE;
- Jorge Martins, MD, General Surgeon, President of the Administrative Board, Hospital Arcebispo João Crisóstomo;
- Jorge Manuel Machado Rola, Chief-Nurse of the Day Surgery Unit, Hospital Distrital de Santarém, EPE;
- José Aníbal Soares, MD, General Surgeon, Centro Hospitalar do Baixo Alentejo, EPE;
- José Gaspar Pais, Phd (Econ), President of the Administrative Board, Centro Hospitalar da Póvoa do Varzim/Vila do Conde, Public Enterprise Entity (EPE);
- Luís Gabriel Pereira, MD, General Surgeon,, Coordinator of Day Surgery Unit, Centro Hospitalar do Baixo Alentejo, EPE;
- Luís Meireles, MD, ENT Surgeon, Centro Hospitalar do Porto, EPE;
- Manuel Gonçalves Carvalho, MD, General Surgeon, Clinical Director, Hospital do Espírito Santo, EPE;
- Manuel Seca, MD, General Surgeon, Coordinator of Day Surgery Unit, Centro Hospitalar do Porto, EPE;

- Manuela Mota Pinto, PhD (Econ), Member of the Administrative Board, Centro Hospitalar de Coimbra, EPE;
- Maria Isabel Rocha Macedo, Chief-Nurse of the Operating Room, Centro Hospitalar da Póvoa do Varzim / Vila do Conde, EPE;
- Maria Fátima Aguiar Pereira, MD, General Surgeon, Hospital Visconde Salreu;
- Mohamede Americano, General Surgeon, Director of Day Surgery Unit, Centro Hospitalar do Barlavento Algarvio, EPE;
- Nilza Maria Lopes Rocha Araújo Lima, Chief-Nurse of the Day Surgery Unit, Hospital Curry Cabral, EPE;
- Óscar Gonçalves, MD, Vascular Surgeon, Director of the Vascular Surgery Department, Hospitais da Universidade de Coimbra;
- Paulo Dinis, MD, PhD, Urologist, Hospital São João, EPE;
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- Silvestre Carneiro, MD, PhD, General Surgeon, Coordinator of Day Surgery Unit, Hospital S. João, EPE;
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TECHNICAL GROUP

- Ana Leça, MD, Director of the Clinical Quality Department, Directorate General for Health (DGS);
- Claúdia Borges, PhD (Econ), Operational Unit of Contracts and Financing, Central Administration of the Health System (ACSS);
- Fernando Mota, Vice-President of the Administrative Board, ACSS;
- Fernando Tavares, MD, Coordinator of the Studies and Planning Department, ARSN-IP;
- Pedro Gomes, MD, Coordinator of the Central Unit of the Waiting Surgical List (UCGIC);
- Sofia Coutinho, PhD (Arch), Coordinator of the Functional Unit of Projects and Equipments, ACSS.

CONSULTATIVE BODY

- Ana Paula Santos Silva, Nurse, General Nursing Association;
- Eurico Alves, Member of the Administrative Board, Health Regulatory Entity (ERS);
- Isabel Machado, PhD, Member of the Administrative Board of the Patient Association "Plataforma Saúde em Diálogo".

Active preoperative nutrition is safely implemented by the parents in pediatric ambulatory tonsillectomy

Seija Klemetti. Ilpo Kinnunen, Tarja Suominen, Heikki Antila, Tero Vahlberg, Reidar Grenman, Helena Leino-Kilpi

Abstract

Preoperative fasting is considered to be necessary to prevent intraoperative regurgitation and aspiration of gastric contents. However, long-lasting preoperative fasting has been shown to have a connection with postoperative problems, such as nausea.

Objective: To evaluate whether preoperative nutritional counseling of parents on child's limited preoperative fasting and active preoperative nutrition risks the child's safety in pediatric ambulatory tonsillectomy.

Methods: Families, with children 4 – 10 years old, were randomly allocated to the study groups (n= 116; 58/58). The intervention group received verbal and written preoperative counseling on child's active preoperative nutrition, and the control group the current written guidelines. All children were asked to be four hours without solids and two hours without fluids. The children in the intervention group were encouraged to have clear fluids on two occasions. The later portion was two hours preoperatively. Preoperative fasting, surgery, the child's hemodynamic, nausea and vomiting and incidents of aspiration during anesthesia induction and first postoperative oral intake were recorded.

Results: The parents in the intervention group followed the guidelines and there were no mistakes such as exceeding fasting time limits. No complications, such as aspiration, occurred though the total preoperative fasting time in the intervention group was significantly shorter ($p<.0001$) than in the control group.

Conclusion: According to the present fasting guidelines in the pediatric ambulatory tonsillectomy, children are advised to fast in fluids for two hours before surgery. However, the children fast significantly longer. Although active counseling on child´s preoperative nutrition increased preoperative oral fluid intake, no complications occurred, and fasting of the child was safely implemented by the parents.

Keywords: ambulatory surgery, parents, pediatric tonsillectomy, preoperative fasting, safety.

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The purpose of a long period of preoperative fasting in surgical care has been to prevent aspiration of stomach contents by reducing the risk of vomiting. This has been based on the assumption that long periods of fasting will reduce the volume and acidity of stomach contents and the risk of pneumonia caused by aspiration [1]. Children undergoing ambulatory surgery have been without fluids preoperatively for even more than 14 hours [2]. Research in the field of pediatric surgery has highlighted the need for shorter preoperative fasting periods [3], and randomized controlled trials have shown that a two-hour fast is safe and might even have a beneficial impact on the acidity of stomach contents [4] and promote emptying of the stomach [5]. Neither aspiration nor other complications related to fasting have increased, and patients have been more satisfied [6]. According to the parents, the children are less irritable and tolerate the preoperative experience better, nor do they consider the changed guidelines difficult to follow [4].

According to the present fasting guidelines, children are allowed to drink clear fluids two hours and eat solid food 4-6 hours before surgery [7, 8]. In practice, changes have been delayed because of fears related to aspiration [9], and according to recent studies, children are still often fasting preoperatively for longer periods in spite of the guidelines for shorter fasting times [10,11], although the benefits of shorter fasting times have clearly outweighed the drawbacks [12].

Pediatric tonsillectomy patients seem to fast preoperatively for as long as others in pediatric surgical care [13, 3, 14, 15], even though their postoperative fast may be several hours longer. Thus, preoperative clear fluids might help to resolve the problem of perioperative irritation and dehydration in children [16], also in pediatric tonsillectomy patients. However, one of the most common

postoperative problems in tonsillectomy patients is nausea and vomiting which may cause fears of aspiration [17], and may have been delaying the implementation of the shorter fasting guidelines in pediatric tonsillectomy patients, especially in ambulatory settings when the parents are taking care of the child's preoperative fasting.

The purpose of this study was to examine whether preoperative nutritional counseling of the parents on the child's fasting, and the child´s active preoperative nutrition by the parents causes increasing risk situations in the child's safety in pediatric ambulatory tonsillectomy.

Materials and Methods

Patients

A prospective, randomized intervention study was designed with the approval of research institutions. The data were collected between February 2006 and January 2008. Children 4 – 10 years old (n= 134), admitted for ambulatory tonsillectomy, were invited to participate in the study. Children with diabetes, gastro-esophageal problems, or other severe disease, and weight over 50kg were excluded. The study information was delivered to the parents by mail with the invitation to the child's surgery. Informed consent was ensured verbally and in written form from the parents and verbally and/or in written form from the children according to the child´s wishes. Ten families did not agree to participate, 124 families were randomly allocated into an intervention group and a control group (62 / 62). All families except six (4.8%) completed the study, one child was operated before admission because of a peritonsillar abscess, and in one case the study protocol was violated. The data consist of 116 (58 / 58) children.

Surgery and perioperative setting

Surgery was performed using sharp dissection or electrocautery technique. The experience of the surgeon (resident / specialist) and the surgical technique frequencies did not differ significantly between the study groups. No sedative premedication was administered, but the site of venapuncture was anesthetized with EMLA cream® (Astra Zeneca, Sweden). Propofol 3 mg/kg and fentanyl 3 µg/kg were used for anesthesia induction, and the patients were paralyzed for endotracheal intubation using 0.5 – 1.0 mg of rocuronium bromide. Anesthesia was maintained with 1 – 2 MAC sevoflurane in air, depending on the required level of anesthesia.

At the end of surgery, neuromuscular blockade was reversed with glycopyrrolate (10 µg/kg) and neostigmine (50 µg/kg), and the child was extubated when spontaneous respiration was regular and adequate. After extubation, the child was transferred to the postanesthesia care unit (PACU) for continuous monitoring of vital signs. All patients received oxycodone 0.1mg/kg iv in the PACU during the first postoperative hour. The same dose was repeated as a rescue analgesic in six patients in each group; one child in the control group received it twice. All patients had postoperative iv infusion (Natriumklorid Braun 4,5mg/ml cum glucose 25mg/ml; B. Braun Medical Oy), the intervention group 21 ml/kg (SD 5.94) and the control group 22ml/kg (SD 7.28). The patients were transferred to the second phase recovery room when they were fully awake and their cardiovascular and respiratory status was stable.

Study design

The parents and the children, according to their age, in the intervention group (n= 58) received verbal and written preoperative nutritional face-to-face counseling on the child's fasting and active preoperative nutrition. The children were asked to be four hours without solids and two hours without fluids before surgery. On the morning of surgery, the children were actively encouraged to drink clear fluids on two occasions, at 4:30 and at 7:00. The later portion was two hours before surgery. Clear juices without pulp or visible chunks were allowed. Portions were calculated according to the child´s weight, 10ml / kg [7, 9]. All operations were scheduled to begin at 9:00 am.

The control group (n= 58) received current information on the child´s preoperative fasting without any verbal preoperative counseling. The information was given in written form and delivered to the parents by mail. The parents were asked to keep the child without solid food for four hours and without fluids for two hours prior to surgery. Before discharge both study groups received the same verbal and written instructions about the child´s postoperative home care.

Data collection

On the morning of surgery the parents were asked verbally and in writing about the timing, quality and quantity of the child´s preoperative oral intake. Exceeding of the portions and timing of structured preoperative nutrition were recorded. Also the type and duration of surgery, the child's blood pressure, heart rate, bleeding, nausea and vomiting in the operating room, as well as heart rate, bleeding, nausea, vomiting and the time spent in the PACU and first oral intake were recorded. In addition, all intra- and postoperative complications were recorded.

Statistics

The differences in categorical variables between the groups were tested using chi-squared test. Shapiro-Wilk test was used to test the normality of the continuous variables. The differences in the normally distributed variables between groups or dichotomic demographic variables were compared with two-sample t-test. In the case of non-normally distributed variables Mann-Whitney U-test was used. P-values less than 0.05 were considered statistically significant. Statistical analyses were performed using SAS System for Windows, version 9.1 (SAS Institute Inc., Cary, NC).

Results

The data from 116 families were recorded. The characteristics of the participants are shown in Table 1, overlaef.

Child's preoperative fasting

Children's preoperative fasting in the case of solids did not differ between the study groups; this lasted over four hours in all cases. In the case of fluids the difference between the study groups was significant (Table 2). In the intervention group children received clear fluids at 4:30 (mean 7.7ml/kg, SD 2.5) and at 7:00 (mean 8.1ml/kg, SD 2.4). None of the parents exceeded the portions or timing of structured preoperative nutrition. No association with the children's characteristics and the preoperative fasting times was shown.

Table 2 The children's preoperative fasting (n = 116).

Preoperative fasting time	Intervention group (n= 58	Control group (n=58)	p-value
/ in case of fluids (h) [mean (SD) min / max]	2.69 (2.08) 1.91 / 14.35	12.13 (2.45) 2.95 / 14.05	<.0001
/ in case of solids (h) [mean (SD) min / max]	12.20 (1.80) 5.567 / 15.98	12.69 (1.53) 10.17 / 14.05	0.343

Table I Characteristics of the participants (n = 116).

	Intervention group (n= 58)	Control group (n=58)	p-value
Mother or Father / Both [n (%)]	41 (70.7) / 17 (29.3)	48 (82.8) / 10 (17.2)	0.215
Age (yrs) [mean (SD)]	35.6 (5.3)	35.6 (6.2)	0.210
Education			
– compulsory schooling / high school [n (%)]	29 (50) / 27 (46.5)	33 (56.9) / 23 (39.7)	0.782
– higher education [n (%)]	12 (20.7)	4 (6.9)	0.040
– education in health care [n (%)]	13 (22.4)	16 (27.6)	0.668
Child in surgery			
– sex (m/f) [n (%)]	34 (58.6) / 24 (41.4)	25 (43.1) / 33 (56.9)	0.137
– age (yrs) [mean (SD)]	7 (2)	6 (1.5)	0.001
– height (cm) [mean (SD)]	126 (13)	120 (11)	0.159
– weight (kg) [mean (SD)]	28 (9)	25 (7)	0.036
Earlier experiences of fasting in surgical care [n (%)]:			
Experiences of the parents:			
– earlier surgical care (yes / no)	36 (62.1) / 22 (37.9)	46 (79.3) / 12 (20.7)	0.065
– time of surgery	5(8.6) / 14 (24.1)/	8(13.8)/16(27.6)/10(17.2)/4(6.9)	0.694
(within 1 / 5 / 10 years / over 10 years ago)	9(15.5)/7(12.1)		
– type of surgery (ENT*/ other)	11 (19) / 25 (43.1)	16 (27.6) / 27 (46.6)	0.834
In the family:			
– earlier surgical care (yes / no)	32 (55.2) / 26 (44.8)	32 (55.2) / 24 (41.4)	0.852
previous time of surgery (within 1/ 5 / 10 years / over 10 years ago)	10 (17.2) / 13 (22.4) /6 (10.3) / 1 (1.7)	7 (12) / 14 (24.1) / 5 (8.6) / 0	
– type of surgery (ENT*/ other)	23 (39.7) / 8 (13.8)	17 (29.3) / 14 (24.1)	0.253
Fasting information:			
– earlier information (yes / no)	19 (32.8) / 38 (65.5)	16 (27.6) / 40 (69)	0.685
– time of information (within 1 / 5 / 10 years / over 10 years ago)	1 (1.7) / 4 (6.9) / 3 (5.2) / 8 (13.8)	0 / 4 (6.9) / 3 (5.2) / 7 (12)	1.000

* ENT = ear, nose and throat surgery

Child's intraoperative safety

The operations of the children in the intervention group went well although there were variation, e.g. in the duration of surgery and intraoperative blood loss. However, there were no significant differences between the study groups regarding intraoperative registration. Moreover, none of the children in either study group vomited in the operating room, and none did have any sign of aspiration during anesthesia induction. (Table 3, opposite)

Child's postoperative safety

The children in the intervention group did not suffer from nausea in the PACU; only one child had nausea and no one vomited. Some of the children experienced seeping from the wound in the throat and spat blood, while one child in the intervention group was reoperated because of postoperative bleeding (Table 3). There were no significant differences between the two groups in these respects. However, most children in both study groups received, at least, their first portions of fluids before discharge when the perioperative fasting time in the control group had lasted significantly longer ($p<.0001$) than in the intervention group (Table 4).

Table 4 The children's perioperative fasting (n = 107).

	Intervention group (n= 58	Control group (n=58)	p-value
Total perioperative fasting time (h) [mean (SD) min / max]	6.00 (2.47) 4.00 / 16.75	15.55 (1.95) 9.50 / 21.25	<.0001

Discussion

Doubts have been expressed about the safety of shorter preoperative fasting times because of a fear of nausea, vomiting and aspiration [1, 17]. Especially children undergoing tonsillectomy may have caused concern because they are more likely to suffer from nausea and vomiting. The concern may be stronger in ambulatory settings where the implementation of the child´s preoperative fast is parental. Therefore, the purpose of this study was to examine whether preoperative nutritional counseling of the parents on the child's fasting and active preoperative nutrition by the parents risks the child's safety in pediatric ambulatory tonsillectomy.

Table 3 Registration in the operating room and in the PACU (n = 116).

	Intervention group (n= 58)	Control group (n=58)	p-value
Operating room:			
– (TE / TEA* [n (%)]	21 (36) / 37 (64)	13 (22) / 45 (78)	0.102
– additional surgery** [n (%)]	15 (26)	19 (33)	0.414
– sharp dissection / electrocautery [n (%)]	49 (86) / 9 (15.5)	54 (93) / 4 (7)	0.238
– resident / specialist [n (%)]	47 (81) / 11 (19)	48 (83) / 10 (17)	1.000
– duration of surgery** [min)]	30.5 (14.9)	34 (12.6)	0.163
[mean (SD)	7 / 83	9 / 73	
min / max]			
– aspiration during anaesthesia induction	0	0	
– RR	116 / 65 (14 / 12)	114 / 63 (16 /13)	0.188 / 0.114
[mean (SD)	80 / 38 / 170 / 101	88 / 32 / 162 / 112	
min / max]			
– blood loss (ml/kg)	2 (2.13)	2.6 (2.30)	0.073
[mean (SD)	0 / 8.33	0 / 10.4	
min / max]			
– nausea / vomiting [n%]	0 / 0	0	
– urination	0	0	
PACU:			
– time in the PACU [n (%)]	50.4 (17.3)	47.8 (15.1)	0.332
[mean (SD)	28 / 145	20 / 123	0.040
min / max]			
– heart rate (ml/kg)	82 (15.3)	87 (17.6)	0.263
[mean (SD)	48 / 135	50 / 150	1.000
– bleeding [n%]	1 (1.7)	0	
– spitting blood [n%]	6 (10.3)	13 (22.4)	0.130
– nausea / vomiting [n%]	1 (1.7) / 0	2 (3.4) / 0	1.000
– urination [n%]	2 (3.4)	1 (1.7)	1.000

* TE = tonsillectomy / TEA = adenotonsillectomy ** tympanostomy, paracentesis or maxillary puncture

The parents in the intervention group followed the guidelines. In the case of solids, the children fasted from the previous evening. In the case of fluids, the children received fluid portions according to the guidelines and no mistakes occurred. In this study, the amounts of fluids were determined according to the child´s weight, whereas former studies have confirmed that unlimited amounts of clear fluids are safe up to two hours before surgery in children [13, 14]. Thus, the parents in this study were able to follow more restricted instructions than are recommended by the guidelines.

No complications, such as aspiration during anesthesia induction, occurred during the children's surgery, although in the intervention group, the parents strictly followed the instructions increasing preoperative fluid intake of their child. According to the results of this study, in limited preoperative fasting time in children even after active nutritional counseling of the parents, there is no fear of aspiration. However, although limited preoperative fasting times have been considered valid, the compliance with the guidelines have been inadequate [11]. Focus of the interest have been more in the idea that the children are not allowed to take fluids at least for two hours before surgery but not in the fact that the children are allowed, and even recommended [3], to take clear fluids freely up to two hours before surgery. It seems that shorter preoperative fasting time may have been prevailing guideline but its implementation has been passive. Health care professionals may have an illusion about their modern fasting guidelines in children. However, it seems that the child´s active preperative nutrition to avoid his/her extensive perioperative fasting times is dependent on the activity of health care professionals, at least in ambulatory settings.

Health care professionals have had their doubts about the safety of limited preoperative fasting times. Therefore, parents of the children in ambulatory surgery may be embarrassed and do not follow those guidelines without closer counseling [18]. However, it seems that there is not former studies concerning distinct implemented preoperative fasting times in children undergoing ambulatory tonsillectomy. According to the results of this study, preoperative nutritional counseling of the parents on the child's fasting, and the child´s active preoperative nutrition by the parents increases child's preoperative fluid in take but does not increase the number of mistakes in fasting times or perioperative complications. The present fasting guidelines, which should limit the preand perioperative fasting times, especially in children, are not reality until after active preoperative counseling of the parents but does not risk the children's safety. Although the data of this study were relatively small, and more research is needed, we can recommend active preoperative counseling of the parents on present fasting guidelines without fears of complications in pediatric surgical care.

Conclusion

In conclusion, active preoperative nutrition of fluids up to two hours before surgery decreases significantly child's pre- and perioperative fasting time and may release child perioperative stress. According to the present fasting guidelines in the pediatric ambulatory tonsillectomy, patients are advised to fast in fluids for two hours before surgery but the children fast significantly more without preopeative active counseling. Although active counseling on child´s preoperative nutrition increased preoperative oral fluid intake, no mistakes or complications occurred, and fasting was safely implemented by the parents.

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Abstracts

Volume 14, issue 2, 2009

Review Telemedicine in ambulatory anesthesia and surgery: possibilities and limitations

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Abstract

Telemedicine is defined as the use of information and communication technologies with the purpose of providing health care remotely. In the perioperative environment, anaesthesiology has made use of it on a few occasions, mainly oriented towards the preanesthetic study. Moreover, the expansion of day surgery could be supported by telemedicine as a communication tool with patients at home, as evidenced by our national experience. The implementation of these communication systems is faced with a long series of potential barriers, and the lack of evidence of clinical benefits is the main obstacle to their widespread use.

Key words: Telemedicine, Anesthesia, Ambulatory surgery.

Original 1 Complications after hospital discharge: 24 months follow-up by an ambulatory surgical unit

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Abstract

Introduction: Postoperative recovery is, possibly, the most important period in ambulatory surgery. Patient- selection, anaesthetic and surgical techniques are geared for a safe post-dischage stay at home and satisfaction of patients and their family.

Material and methods: Follow-up at home is supervised by telephone calls to the patients made by the hospital nurses after 24 h-48 h or by visits to the hospital the first postoperative day. The hospital provided all patients or family with a telephone number to ring at any time for advice on outcome, difficulties or to contact their physicians. These phone calls by patients to the hospital are recorded by nurses of the ambulatory unit. This study is a retrospective analysis of these calls recorded from January 1st 2006 to December 31st 2007.

Results: Of the 6242 patients who underwent ambulatory surgery, 224 called our unit after discharge. Severe to moderate pain was the main reason for the call in 85 (38.39%) cases, bleeding in 42 cases (18.75%) and fever in 37 cases (16.7%).

Most of the calls to the unit were made after 72 h following discharge from the outpatient unit (75.87%).

Conclusions: Providing a means of direct contact of patients with qualified personnel helps us detect and analyze postoperative complications and treatments and establish strategies to prevent them as well as improve our quality indicators.

Key words: Postoperative outcomes, Postoperative follow-up, Postoperative pain, Ambulatory surgery.

Original 2 Incidence of hospital admissions in patients undergoing ambulatory ophtalmological surgery. Analysis and results of the first year

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Abstract

Objective: To analyse the causes for which different patients undergoing ophthalmologic ambulatory surgery were admitted to hospital and the influence this has as a quality indicator.

Material and method: Retrospective descriptive study of all the patients operated on by the Department of Ophthalmology during the year 2006. The data analysed was the following: age, sex, diagnosis, surgical techniques and the cause for admission. A total of 1,412 patients were scheduled to be operated on, out of whom 699 (49.50%) were men, 713 (50.49%) were women, with an average age of 58.5 years and ages ranging from 15 to 104. 1337 (94.68%) patients were operated on for:

cataracts 1053 (78.75%), glaucoma 31 (2.31%), cataracts + glaucoma 11 (0.82%), dacryocystitis 52 (3.88%), pterygium 95 (7.10%), conjunctive verruca eyelid tumour 32 (2.39%), chalazion 27 (2.01%), miscellanea 36 (2,69%). Suspended operations were 75, post-surgical admissions, 8.

Results: Post-surgical admissions were 8 (0.5%): men, 6 (75%), women, 2 (25%), age range 34-83 years old. Operations performed: 4 cataracts (Phacoemulsification + IOL), 1 vitrectomy, 3 glaucoma (trabeculectomy). ASA II in six cases, ASA III in two. Local anaesthetic was employed on two patients, local-assisted in two, topical in three, retrobulbar in one. Concomitant pathologies were: silicosis, high blood pressure HBP (73 years old); meningioma (55 years old); HBP, CVA, insulin-dependent diabetic undergoing treatment with a platelet anticoagulant (67 years old); epilepsy, Virus C hepatitis, alcoholic neurolisis (34 years old); lymphoma (62 years old); HBP, insulin-dependent diabetic, intraventricular blockage of the right branch, under treatment with anticoagulants (77 years old); two cases of HBP (83 and 74 years old). The reasons for admission after surgery were the following: bloody sputum, one patient undergoing treatment for pain in the Pain Unit; pupil blockage and acute glaucomatous crisis; painful blind eye, epileptic seizure; haemorrhage in the eyeball; luxation of the crystalline during the surgery; un-controlled HBP in both cases.
Quality indicators: substitution index 87.90%; admission ratio 0.5%; index of re-admissions for major complications 0.2%; visits in the emergency department for minor complications without admission, 2-3%; suspension ratio 5.31%.

Conclusions: Our ratio of admissions in the ophthalmology wing for ambulatory surgery shows good surgical management of our patients. As a quality indicator in this analysis, we can boast a highly satisfactory ratio of postoperative admissions after the first year of operation.
The percentage of postoperative admissions is directly related to concomitant pathologies and postoperative complications.
The quality indicators studied comply with standards for ambulatory surgery.

Key words: Ambulatory surgery, Ophthalmology, Quality indicators, Nursing.

Original 3 Planning and impact of a one-stop surgery scheme in pediatric surgery

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Abstract

Introduction: By one-stop surgery we mean the performance of both pre-surgery assessment and surgical procedure on the same day.

Material and methods: We report our experience with a pilot study of a one-stop surgery in the province of Bizkaia, with a population of 124,494 children aged 1 to 14 years. Under the new scheme, the average of four visits per patient to the hospital's outpatient clinics was cut down to only one. Diagnosis and pre-surgery assessments were made by the children's. Primary Care Paediatricians at their NHS offices.

Results: One hundred and twenty children were treated over one year. They had abdominal wall, genital or soft tissue surgery. Only two developed minor complications. Families were generally satisfied with the quality of the medical care and 98% scored it as good or very good.

Conclusions: We think that one-stop surgery is a breakthrough in ambulatory surgery. It does not only dramatically lower the number of visits to the hospital´s outpatient clinics, but also the waiting time for surgery, the costs, and the surgeon´s workload, and helps streamline the Public Health Services and the quality of the medical care as perceived by both patients and families. Ensuring a close relationship between Paediatric Surgeons and Primary Care Paediatricians is essential.

Key words: One-stop surgery, Children.

Volume 14, issue 3, 2009

Review Difficult Airway Management in Ambulatory Surgery

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Abstract

The management of a difficult airway in ambulatory surgery is no different from in any other unit, except that Laryngeal masks are used more often. Whenever we suspect a difficult airway, and after evaluating it carefully, we should follow the algorithms proposed by any of the different scientific societies and use any of the masks which we have at hand and with which we are most familiar.

In this article, we revise the most effective devices for the management of a difficult airway in ambulatory surgery.

Key words: Difficult airway, Difficult intubation, Difficult ventilation, Fibroscope, Laryngeal tubes, Video-laryngoscope, Glidescope, Airtraq, Laryngeal masks, McCoy laryngoscope, Ambulatory surgery.

Original 1 Laparoscopic adjustable gastric band for the surgical treatment of obesity. A technique which is possible in ambulatory surgery

Abstract

Objective: To show our experience in the laparoscopic surgical treatment of obesity using the adjustable gastric band (AGBL) included in a program for day surgery.

Patients and method: Between June 2006 and December 2007 we performed the procedure on 57 obese patients, consecutively, using the AGBL technique. The selection criteria used to establish the surgical indications is based on the American National Institute of Health and the SECO. The variables analyzed were: surgical time, time until discharge criteria are met, time spent in hospital post surgery, the overall time of hospital stay (from admittance until leaving) and complications.

Results: All patients were discharged within 24 hours post-surgery. The hospital postoperative stay was 13 hours (r:11–20 h). The total average period of time spent in the hospital was 20 hours (with one night). Average time before reaching discharge criteria was 6 hours. Average surgical time was 118 min (r:80–164 m). We have not registered any intra-operative complications. No reconversions. No re-operations No re-admissions to hospital. No complications during the first 30 days post surgery. One case of subcutaneous port rotation of reservoir that required a repositioning under local anesthesia. Three esophageal disfunctions.

Conclusions: The AGBL procedure performed by multidisciplinary teams dedicated specifically to the treatment of morbid obesity can be included in a program for ambulatory surgery. Most patients recover and are discharged before the anticipated 6 postsurgical hours.

Key words: Morbid obesity, Bariatric surgery, Adjustable gastric band, Ambulatory Surgery, Short-term stay programs.

Original 2 Creating an out-patient surgical unit in a general hospital

Abstract

Objective: The objectives of this study are to study the activity of our out-patient surgical unit during 2006 and the quality of the care given.

Material and method: The Ambulatory Unit (UCMA), a type II integrated unit, was inaugurated in 2005, with the participation of different Departments practicing surgery, using protocols for admission, nursing care and anaesthesia.

Results: 1.592 patients underwent surgery (an 80.91% increase over 2003) with: 53.52% males, 59.74% for ophthalmological surgery, 9.65 patients/day in the UCMA, 75.56% were ASA I, 1.9% cancellations, 4.96% unexpected admissions (74.69% females), 0.3% re-admissions, 97% excellent satisfaction in UCMA and 0% mortality.

Conclusions: Increase of surgical activity through CMA programs allows the hospital to operate on a large number as out-patients, which in turn allows hospital resources to be dedicated to other processes. Quality indexes lead us to affirm that this is a reliable and safe means of treatment, with an excellent degree of patient's acceptance and satisfaction.

Key words: Out-patient surgery (CMA), Quality indexes.

Original 3 Evaluation Of A Telemedicine System For A High Resolution Consultation In Ambulatory Surgery

Abstract

Objective: The intention of the present study is, first of all, to evaluate the diagnostic capacity of a telemedicine system based on a tool of videoconference, used to optimize the High Resolution Consultation of the Unit of Ambulatory Surgery in the "San Carlos" Clinical Hospital of Madrid. And secondly, to know the opinion of the patients using this telemedicine system.

Material and methods: The videoconference system used is formed by two terminals connected through the LAN of the hospital by means of A kit Intel ® Proshare ® Video System 500. The Terminal for the Patient has a camera with optical zoom lens, auto-focus and remote control from the Doctor's Terminal. 104 patients have been included in this study (73% men) with an average age of 51 years (22–80 years) corresponding to the following processes: hernias of the abdominal wall, 63.5%; superficial lipomas, 21.15%; pilonidal sinus, 10.6% and hidrosadenitis, 4.8%. Results received from the teleconsultation are matched to those obtained at the in person consultation. In order to know the opinion of the patients about this telemedicine system, a survey with 10 questions was elaborated: 9 were the closed type and one open question. Of the 9 closed questions, 7 are purely yes/no and 2 offer 4 answer options that are mutually excluding.

Results: The data collected in the teleconsultations matched those of the in-person consultations, regarding the different pathologies included in the study, as follows: Inguinal hernia, positive in 98% of the cases; umbilical hernia, epigastric and post-operative insicional hernias, positive in 100% of the cases. Superficial lipoma, positive in 95.5% of the cases; Pilonidal Sinus and Hidrosadenitis, positive in 100% of the cases. The quality of teleconsultation was considered "good" or "very good" by 100% of the patients. 94,1% of the patients felt "quite comfortable" or "very comfortable" during the teleconsultation. 100% of the patients considered that the communication with the doctor in the teleconsultation was "fluid and effective". 97.1% felt safe during teleconsultation and 95.1% did not miss the physical presence of the doctor during teleconsultation. 100% considered using this form of teleconsultation "very useful".

Conclusions: The results confirm that the requirements necessary to be able to use the videoconference as the base of a telemedicine system are fulfilled and that this would allow us to optimize the High Resolution Consultation of the Ambulatory Surgical Unit, eliminating the displacements of the patients.

Key words: High resolution consultation, Telemedicine, Videoconference, Primary care, Ambulatory surgery.

Volume 14, issue 4, 2009

Original 1 Quality control in ambulatory and outpatient surgery

Abstract

Introduction: One of the means used to achieve a better progressive assistance in the Ambulatory Surgical Unit (ASU) is, first of all, to measure and to evaluate the results, comparing them with those of other units, and, then, to apply improvements. Publications mention some changing and some unchanging indicators, and the complexity of the procedures is not always mentioned.

Outpatient Surgery (OS) is an increasing alternative to Ambulatory Surgery for certain procedures, and its quality indicators have not yet been established.

Material and methods: We present our case history of the last 13 years in the ASU and of 7.5 years in the OS. The ASU quality indicators being used were: the replacement index, admissions (immediate and deferred), cancellations, visits to the emergency room and phone calls, and we compared them with other case histories. In OS, we have valued the unsuccessful cases. We handed out a satisfaction questionnaire and two psychiatric scales to evaluate the anxiety state of 117 patients.

Results: We attended 1,467 patients in the ASU. The admissions represented a 3%; readmissions, 0.34%; cancellations, 0.75%; phone calls, 10.4%, and general substitution index, 25%. Amongst the 1,346 patients attended in OS, the unsuccessful cases varied from 2.5% to 22%, depending on the procedures. The average of satisfaction in the ASU was 9.4/10, and in OS was 8.9/10.

Conclusions: The development of our quality control index is favorable, although some aspects may be improved. Some of the indexes being used should be unified in order to make the comparative study amongst Units easier. The replacement index should refer to procedures susceptible to being carried out in the ASU. It would be advisable to notify which surgical procedures were performed in the ASU and are now performed in OS.

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Key words: Ambulatory surgery, Outpatient surgery, Quality control.

Original 2 Investigation in the ambulatory surgical unit

Abstract

Background: The Ambulatory Surgical Unit has an essentially therapeutic approach, although it is possible, within this organizational model, to develop investigation procedures. The purpose of this study is to analyze the use of the ambulatory surgical unit for the development of clinical studies, so we undertook a descriptive study of the papers sent to the most recent congresses on ambulatory surgery.

Methods: A descriptive study of the papers sent to the national and international meetings of 2007-2008, including oral communications and posters describing a prospective or retrospective study.

Results: We checked the communications sent to the IAAS 7th *International Congress of Ambulatory Surgery, VII Congreso Nacional de Cirugía Mayor Ambulatoria and VII Simposio de la Asociación Española de Cirugía Mayor Ambulatoria.* We reviewed 503 communications, of which 51 were prospective studies (10.12%) and 57 retrospective studies (11.33%).

Conclusions: Although investigation studies are perfectly compatible with certain organizational models of care such as the ambulatory surgical unit, there is a marked under-utilization of this type of health organization in connection with investigation activities..

Key words: Investigation, Ambulatory Surgery, Review.

Original 3 Peritoneal dialysis catheter implants: our short term and long term experience

Abstract

Introduction: Our short and long term experience in the implantation of peritoneal catheters is exposed in this study and whether the aims established for Ambulatory Surgery are fulfilled.

Material and methods: An eight year retrospective study. Two groups: catheters type Tenckhoff with two cuffs and catheters type Tenckhoff with two cuffs and a ballast on the end. Surgical peculiarity: the introduction of the catheter in an antibiotic solution. The complications were divided in short and long term depending on when they appeared during the first week of implantation or not.

Results: The most frequent reason for chronic renal insufficiency was: diabetes mellitus (9.8%). In 33.1% of cases (41 catheters) there were no complications, and only pain on the short-term (8.9%) and peritonitis on the long-term (8.1%). 78.43% of the initially implanted catheters did not need to be replaced.

Conclusions: The placement of the peritoneal catheter must be done in the operating room.

Peritoneal dialysis is a sure, effective and simple technique for the surgeon and for the patient. It presents few complications, mainly pain and peritonitis. The catheter is replaced when it works badly or leaks. There are no studies in the literature that reflect the introduction of the catheter in an antibiotic solution before its placement. It can be implanted as an AS procedure.

Key words: Peritoneal dialysis, Catheter. Tenckhoff, Ambulatory surgery, Ambulatory surgical procedure.