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Editorial

Mark Skues, Editor-in-Chief

Now that the long summer evenings and lack of rain (in the United Kingdom at least) are now receding towards more balmy autumnal days, it is time for the next edition of the Journal. This quarter's submissions constitute a varying collection of papers on differing subjects that may not be immediately recognisable as papers involving ambulatory surgery, but like the weather, they provide a backdrop that facilitates the effective use of a one day service.

There is a Portugese contribution describing the development of ambulatory laparoscopic cholecystectomy in their hospital in Lisbon. The authors audited their performance over a six and a half year period, reviewing a total of 355 patients who underwent the procedure, and reported a 93% discharge rate on the day of surgery. While I occasionally hesitate over acceptance of another cholecystectomy paper, it is important to highlight ongoing developments in various countries, yet perhaps we should in future, only publish papers that describe original findings rather than case series for this operation?

Krishna and colleagues evaluated the potential benefits of the introduction of formal handovers when supervising staff changed, to evaluate whether transfers were subsequently reduced from their elective centre to the main hospital. They found that while there was no change in the number of after-hours transfers, the overall rate declined from 2.8% to 1.5% in the months after introduction of the handovers. Interestingly, the number of transfers increased significantly for patients with suspected venous thromboembolism needing further evaluation at the base hospital. As the authors state, concomitant changes in safety initiatives to stratify the risks associated with VTE may have enhanced clinical suspicion in deteriorating patients.

The third paper evaluates the potential value of diagnostic services in the management of acute surgical pain, where a simple change of facilitating abdominal ultrasounds on the emergency surgical ward rather than in the X-ray department was compared by evaluating the times from booking to report and the subsequent clinical decision. The authors also considered the same parameters for rapid access ultrasonography with an 'on-demand' service between 08.00hrs and 17.00hrs, rather than just the three existing morning slots that had previously existed. They found a halving of the time to receiving a report to just under three hours, with a clinical decision made in just over an hour (from over three hours). While one may question the value of this paper in a Journal dedicated to Ambulatory Surgery, it demonstrates how simple changes can have significant time saving effects expediting patient care, as well as being a model for those who consider emergency care to be a valid model for day surgery.

For the final offering, Naresh Row from India provides outcome data over an 10 year period detailing both the spectum of procedures and numbers of patients managed on a day case basis within his hospital. It is a testament to the ongoing management of ambulatory surgery in a developing country.

Preparations are in place for the biennial congress of the IAAS, which is scheduled to take place in Porto, Portugal, in May 2019. A website has been developed at www.iaascongress2019.com , where it is possible to register as a delegate for what promises to be an exceptional meeting. So, time to book your study leave now and enjoy the delights that Porto has to offer!

Mark Skues
Editor-in-Chief

Laparoscopic Cholecystectomy without overnight stay in an Ambulatory Surgery Unit

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Abstract

Laparoscopic cholecystectomy (LC) is nowadays considered the goldstandard procedure for the treatment of lithiasic gallbladder pathology and gallbladder polyps. Its performance in an ambulatory setting is being done in an increasingly number of centers. In our ambulatory Surgery Unit (ASU) we do it without overnight stay.

In this article we intend to describe our experience in the treatment of 355 patients focusing on the special care taken in order to assure the success of the procedure as well as the safety of our patients.

Keywords: Laparoscopic cholecystectomy, Ambulatory surgery.

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Introduction

Lithiasic gallbladder pathology is one of the most common clinical entities in Western countries, affecting 10–15% of the adult population [1]. Laparoscopic cholecystectomy (LC) is currently accepted as the gold standard procedure for the treatment of lithiasis or vesicular polyposis. Numerous studies indicate that, with adequate patient selection, according to a series of inclusion and exclusion criteria, the outpatient LC is an effective and safe procedure [1–6].

The fear of many surgeons and patients, coupled with the lack of defined protocols, is the reason why it is not practiced more often.

With this article we intend to contribute with a further favorable description regarding the practice of ambulatory LC and in our case even without an overnight stay, based on the experience acquired in the treatment of 355 patients in our ASU.

Material and Methods

We analyzed retrospectively the experience that we had in our ASU of the Central Lisbon Hospital Center from June 2009 to December 2016.

During this period, 355 patients were submitted to LC. The presence of associated symptoms (dyspepsia, biliary colic, episodes of uncomplicated cholecystitis) is an essential condition for surgical indication in cases of vesicular lithiasis. In relation to vesicular polyposis, only polyps larger than 1 cm or with recent growth are considered to be surgical candidates [7].

Exclusion criteria for ASU treatment are patient refusal, cases of previous complications of biliary lithiasis such as pancreatitis or cholecystitis with criteria of severity, suspicion of choledocholithiasis, patients with ASA III not compensated or ASA ≥ 4.

All procedures are initiated laparoscopically with pneumoperitoneum, usually performed by closed method with a Veres needle (umbilical or left hypochondrium), usually 12 mm Hg and with 3 or 4 working ports. The method of positioning the surgical team is both French and American, according to the primary surgeon who practices it.

The double ligation of the cystic artery and duct is done with clips, usually 5 mm and the placement of drainage in the Morrison space is optional, being more frequent in situations of more laborious and slightly more hemorrhagic dissections.

Local analgesia is always performed with 0.75% ropivacaine infiltration at the working port locations, prior to the incision, in a context of multimodal analgesia.

Patients are also submitted to prophylaxis of postoperative nausea and vomiting with droperidol, dexamethasone and ondasetron. The patient is only discharged from the UCA if he fulfills in full the PADSS criteria (Postanaesthetic Discharge Scoring System, Table 1).

The LC's are the first surgeries scheduled of the day in order to guarantee a minimum of 6 hours of postoperative recovery in the ASU [1].

The postoperative follow-up of the patients was done at 24 hours by telephone survey, evaluation consultation on the 7th day and after one month.

Results

The mean age of the patients was 47 years, with a minimum age of 20 and maximum of 77 years. The gender distribution was 290 (81%) female and 65 (19%) male, being in agreement with the literature [3]. The distribution according to the ASA was as follows: ASA I - 39 (10.9%), ASA II - 299 (84.2%), ASA III - 17 (4.7%).

The most frequently observed comorbidities were: obesity, arterial hypertension, dyslipidemia.

Regarding obesity, it should be noted that 30 patients (8.4%) were operated on after previous bariatric surgery (bypass or gastric sleeve). This type of surgery increases the incidence of vesicular lithiasis because the rapid weight loss catabolism that enhances the bile with cholesterol, favors precipitation of crystals and the genesis of calculi, aggravated by biliary stasis.

Table I Postanesthetic Discharge Scoring System (PADSS).

Vital signs	
2	Whitin 20% of preoperative value
1	20%-40% of preoperative value
0	40% of preoperative value
Activity, mental status	
2	Oriented and steady gait
1	Oriented or steady gait
0	Neither
Pain, nausea, vomiting	
2	Minimal
1	Moderate
0	Severe
Surgical bleeding	
2	Minimal
1	Moderate
0	Severe
Intake and output	
2	Per os fluids and voided
1	Per os fluids or voided
0	Neither

The mean time of the interventions was 64 minutes.

Unscheduled admissions on the same operative day were 24 (6.7%). The reasons were: the need for conversion to laparotomy - 2 (0.5%), difficulty in controlling pain - 6 (1.7%), difficulty in controlling nausea and vomiting - 11 (3%), surgical procedures more laborious and time-consuming requiring a higher degree of postoperative surveillance - 4 (1.1%) and one case of subcutaneous extravasation of drugs through vascular access (0.3%).

The need for immediate conversion to Kocher's laparotomy described in 2 cases was due in one case to difficult-to-control hemorrhage and in another to difficulty in identifying anatomical structures. These patients were discharged after 48 h of hospitalization, clinically well and there were no complications at postoperative follow-up.

Also, the 18 patients hospitalized for difficulty in controlling pain, nausea and vomiting and the case of subcutaneous extravasation of drugs were discharged after a maximum of 48 hours fully recovered and without any intercurrence.

Of the 4 more laborious LC situations that required hospitalization for surveillance, 2 were discharged on the following day without complications, and 2 needed reoperation with laparotomy.

In one case, reoperated 12 hours after the first surgery due to haemodynamic compromise and abundant hepatic abdominal drainage, a haemoperitoneum was observed. The second operation consisted of draining the haemoperitoneum, verification of the absence of active bleeding and application of floseal glue in the hepatic bed.

The second patient was re-operated on the 4th day after LC, for biloma causing the patient persistent pain, elevation of inflammatory parameters and an image of subhepatic collection in CT. Intraoperatively, a small leak was detected in the cystic duct and, after confirming that there were no changes in the biliary tree by intraoperative cholangiography, clips were placed on the cystic duct and drainage was performed. These two cases had favorable evolution without subsequent complications.

One patient required readmission after surgery: The patient went to the emergency department 2 days after discharge from the ASU with complaints of abdominal pain. After the detection of voluminous subcutaneous emphysema and pneumoperitoneum, he was laparotomized and faecal peritonitis with a colonic injury in the vicinity of the trocar port was found. After peritoneal toilet, he underwent sigmoidostomy. He was discharged on the 13th postoperative day. In the meantime, the intestinal tract has already been reconstructed, without further complications, and the patient is clinically well.

In the follow-up evaluation of the 355 patients, even the 3 cases with more severe complications previously described, are fully recovered.

No mortality was recorded.

Conclusions

From the analysis of the results obtained, we can conclude that performing a laparoscopic cholecystectomy in an ambulatory surgery unit without an overnight stay is a safe option, and a high rate of discharge (93%) was achieved in this study.

Although some complications were observed, they were very small in number (0.8%) and had timely treatment with complete resolution in each situation and no case of mortality.

According to the literature, the incidence of major complications after LC is about 1-5%, with most situations (hemorrhage, biliary lesion or intestinal perforation) being diagnosed at the time of surgery or 24 to 36 hours after surgery, often when the patient has already been discharged even in conventional surgery programs with scheduled hospitalization [2,3,6]. Thus, unscheduled patient admission, which fully meets the high PADSS criteria, does not add any effective safety. On the contrary, failure to comply with one of the criteria is a mandatory condition to motivate hospitalization, in order to guarantee patient safety, which is always our main concern.

Also essential is to ensure scrupulous compliance with the conditions of inclusion and exclusion in the patients' proposal for intervention in an outpatient surgery environment, as previously mentioned.

In order to minimize unplanned admissions, potential complications should be avoided and measures such as the inclusion of multimodal analgesia models and prophylaxis of nausea and vomiting should be taken [4]. These are the main causes of unscheduled admissions2, also in our experience.

The practice of this procedure in ambulatory surgery allows an increase in the surgical activity that is not limited by the number of hospital beds, which are often unavailable, considerably reducing costs (up to 35% [1]), never neglecting the guarantee of total safety for patients [2].

In our particular case, the same-day hospital discharge rate of 93% was even higher than that reported in some studies [4]. Finally, the degree of satisfaction of the patients which is indeed very high.

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The Impact of Introducing Handovers on After-hours Patient Transfers in an Elective Surgery Centre

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Abstract

Background There has been increasing use of satellite facilities for elective surgery to allow more efficient use of major hospital resources. Manukau Surgical Centre (MSC) is a stand-alone elective surgical centre which operates in conjunction with Middlemore Hospital (MMH). MSC has limited services, particularly after-hours and clinically unstable patients are required to be transferred to MMH for further management.

Purpose This study evaluated whether the introduction of a formal handover process – "the huddle" - had an effect on reducing the proportion of such after-hours transfers.

Methods Patient transfers between MSC and MMH over the periods of August to November 2014 (pre-huddle) and March to June 2015 (post-huddle) were included in the study. Primary outcomes included proportion of after-hours transfers (as a function of total transfers). Secondary outcomes included monthly transfer rate.

Results There were no significant differences in the proportion of after-hours transfers between pre- and post-huddle months with an odds ratio of 0.898 ($p = 0.76$). Monthly transfers overall were also not statistically different. There was a significant increase (22.5%) in the number of patients being transferred for further radiological investigations ($p = 0.033$). In addition, there was a significant increase in the proportion of transfers under the presumed diagnosis of venous thromboembolism (VTE) of 23.4% ($p = 0.0023$).

Conclusions The "huddle" did not demonstrate significant differences in reducing the proportion of after-hour transfers from MSC to MMH. However, there were significantly more transfers that required radiological investigations as well as transfers under the presumptive diagnosis of VTE.

Keywords (MeSH): Quality Improvement, Patient Transfer, Communication, Patient Safety, Elective Surgical Procedures

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Introduction

Manukau Surgery Centre (MSC) is a stand-alone elective surgical centre that provides a range of elective surgical procedures in South Auckland, New Zealand, as Counties Manukau Health. The main hospital is Middlemore Hospital (MMH) that operates as a major acute general hospital. Since its opening of in-patient capacity in 2001, elective services at MSC have steadily grown to keep up with the demand of the growing CMH population and meet national targets for improving access to elective surgery [1]. While overseen by surgical consultants and registrars based at MMH, the day-to-day running of the surgical unit is staffed by house officers (postgraduate year 2 or above junior doctors), clinical nurse managers and nursing staff. House officers manage post-operative recovery in consultation with surgical registrars and consultants with input from clinical nursing staff. In addition, high dependency patients are admitted to a four-bed peri-operative care unit, managed by a consultant anaesthetist and anaesthetic registrar.

A large variety of surgical procedures are carried out at MSC. These include total joint replacements, major colorectal surgery (both laparoscopic and open), total abdominal hysterectomies in addition to minor procedures and day stay surgery, Acute services at MSC are limited in terms of medical expertise and resources such as radiological imaging or laboratory testing, particularly after-hours. When patients are recognised as clinically unstable or requiring management beyond the resources available at MSC they are transferred by ambulance to MMH in consultation with specialist advice at MMH.

Concerns about whether delayed care contributed to over the clinical status of some patients requiring transfer led to the introduction of a formal handover process – the "huddle" –in December 2014 with the intention of identifying and anticipating clinical issues and the need for patient transfer to MMH. Effective handover processes have long been recognised as vital components of safe clinical practice in order for patients to receive timely and effective care [2]. Formal handovers allow appropriate management to be implemented earlier in the patient's clinical course and possibly preventing patient transfers and pre-empting clinical deterioration. These "huddles" occur at 1500 and 2200, marking the change-over between day and evening staff (1500) and evening and night staff (2200). The evening huddle consists of the evening house officer, anaesthetic consultant, anaesthetic registrar and clinical charge nurse managers for the wards at 1500. At the night huddle, there is the evening house officer, night house officer, night clinical nurse advisor and night anaesthetic registrar.

This study was conducted to review our experience with transfers before and after the introduction of the 'huddle'. Specifically, we sought to evaluate the effect of the "huddle" on after-hours patient transfers between MSC and MMH by comparing transfers over a four month period prior to (August 2014-November 2014) and after (March 2015-June 2015) the introduction of the formal handover.

We hypothesised that the "huddle" would reduce the proportion of after-hours transfers by identifying clinically unwell or deteriorating patients at an earlier stage and instituting appropriate management earlier in their post-operative course and potentially avoiding transfer to to MMH. It was anticipated that the information from this study may be utilised to manage resources in the future, as well as to examine the effectiveness of our huddle in limiting exposure to clinical risk.

Methods

Ethical and study approval was obtained from the CMH Research Office prior to extraction of clinical data.

Patients

Transfers between MSC and MMH over the periods of August 2014 to November 2014 (defined as pre-huddle) and March 2015 and June 2015 (defined as post-huddle) were included in the study. Cases were identified using the CMH patient transfer record of all patients transferred between MSC and MMH.. The following cases were excluded from the study:

1. Paediatric patients (no inpatient services for children are available at MSC)
2. Transfers directly from theatre or the post-anaesthetic recovery unit (i.e. not admitted to the MSC post-operative wards. These included planned transfers where a post-operative admission to MMH had been planned prior to surgery)
3. Non-acute transfers to the adult treatment and rehabilitation ward at MMH

After-hours was defined as 1600-0759 weekdays and all hours of the weekends. The morning, evening and night periods were defined as 0800-1559, 1600-2159 and 2200-0759 weekdays respectively.

Variables retrieved included age, gender, ASA score (ASA physical status classification system as adopted by the American Society of Anaesthesiologists (ASA)), surgical speciality; time of transfer; presumed diagnosis at time of transfer; reason for transfer; management following transfer and length of stay (LOS) following transfer. Two authors (SK and BB) extracted these data from the identified case records.

Outcomes and statistical analysis

Primary outcomes included proportion of after-hours transfers (as function of total transfers), and time of transfers.

Secondary outcomes included proportion of overall transfers (as function of total surgical cases) per month, length of stay, and management after transfer. Reasons for transfer was also analysed and stratified into 4 categories: further investigation/imaging, need of intensive care or high dependency unit care, request for surgical review, or request for medical review.

Statistical analysis was performed using SAS version 9.4 [SAS Institute, United States of America]. Descriptive statistics for the demographics variables were expressed as counts and proportions. Analysis of categorical variables was performed using chi-square test.

Binary logistic regression was used to compare outcomes; after-hours transfers and length of stay between the two periods whilst adjusting for the risk factors - age, gender, ASA, specialty, reason for transfer, diagnosis and management. To compare time of transfers between the two periods, logistic regression model fitted with a multinomial distribution was carried out and adjusted by the listed risk factors. The results from these models were represented as odds ratios with 95% confidence interval and p-values.

The monthly overall transfers were compared before and after the hand-over period using Poisson regression with the offset of total cases unadjusted for the risk factors. Cochran-Armitage Trend Test was used to determine if there was a significant trend in the proportions of transfers during the later ("post-huddle") 4-month hand-over period. Chi-square test was performed to see if there was there was a difference in the proportions of management between the two periods.

Results

A total of 140 patients were transferred in the two 4 month periods.

A summary of variables for the two transfer populations is shown in Table 1: proportions for gender, ASA status and surgical specialities were not significantly different for these two groups.

There were, however, significant differences in the reason for transfer in the period following the introduction of the handover process (Table 1); significantly more transfers required some form of radiological investigation (23.9% compared with 46.4%: p=0.033). There was also a significant increase in the number of transfers with a presumed diagnosis of venous thromboembolism (VTE) – (8.5% versus 31.9%: p=0.0023).

Primary outcomes

There was no significant difference in the proportion of after-hours transfers following the introduction of the huddle (Table 2: p=0.76). There was an increase in the proportion of transfers occurring during the evening period (1600-2159), but this difference (35.2% versus 44.9%) was not statistically significant (p=0.49).

Table 2 After-hours transfers and time of transfers before and after the introduction of the huddle.

	Pre-huddle (N = 71)	**Post-huddle (N = 69)**
After-hours transfers		
Working hours	23 (32.4%)	24 (34.8%)
After-hours	48 (67.6%)	45 (65.2%)
Time of transfers		
0800-1559	37 (52.1%)	30 (43.5%)
1600-2159	25 (35.2%)	31 (44.9%)
2200-0759	9 (12.7%)	8 (11.6%)

Secondary outcomes

The mean transfer rate as a function of total surgical cases over the 8 months was 1.92%. The mean pre-huddle transfer rate was 1.80% while the post-huddle transfer rate was 2.05%. There were no significant differences between monthly transfers and Poisson regression indicated that there were no significant differences in the expected rates of monthly transfers. The rate ratio for after hours transfers for Post-huddle versus Pre-huddle was 1.10 (95% CI= 0.81, 1.52) (p=0.516). During the post-huddle months there was a progressive decrease in the proportion of surgical cases requiring transfer (Figure 1) (near here) . The Cochran-Armitage Trend Test showed a significant decreasing trend with a p-value of 0.040. Following the introduction of the huddle, there was a 8.7% increase in subsequent, on-going routine management for patients transferred to MMH, and a corresponding decrease in the introduction of new,

Table 1 Summary comparison of pre-huddle and post-huddle transfers.

Demographics characteristics	Pre-huddle	Post-huddle	p-value
N (%)	N = 71	N = 69	
Gender			
Male	33 (46.5)	32 (46.4)	0.99
Female	38 (53.5)	37 (53.6)	
ASA score			
ASA 1	4 (6)	7 (10.3)	0.65†
ASA 2	30 (44.8)	31 (45.6)	
ASA 3	30 (44.8)	29 (42.7)	
ASA 4	3 (4.5)	1 (1.5)	
Speciality			
Orthopaedic Surgery	30 (42.3)	34 (49.3)	0.064
General Surgery	21 (29.6)	21 (30.4)	
Plastic Surgery	12 (16.9)	4 (5.8)	
Otorhinolarygnology	3 (4.2)	0 (0)	
Gynaecology	5 (7)	10 (14.5)	
Reason for transfer			
Investigation (USS/CT/CTPA)	17 (23.9)	32 (46.4)	0.033*
ICU/HDU care	8 (11.3)	6 (8.7)	
Surgical review	26 (36.6)	21 (30.4)	
Medical review	20 (28.2)	10 (14.5)	
Presumed diagnosis			
Cardiac	18 (25.4)	7 (10.1)	0.0023*
Respiratory	12 (16.9)	4 (5.8)	
Gastrointestinal/abdominal	11 (15.5)	11 (15.9)	
Venous thromboembolism	6 (8.5)	22 (31.9)	
Planned transfer	16 (22.5)	14 (20.3)	
Failed discharge	8 (11.3)	11 (15.9)	
Management			
Theatre/operative intervention	10 (14.5)	11 (15.9)	0.61
ICU/HDU admission	7 (10.1)	4 (5.8)	
Active treatment (antibiotics, anticoagulation)	28 (40.6)	24 (34.8)	
Conservative (analgesia, fluids, rest)/no change in management	24 (34.8)	30 (43.5)	
Length of stay			
<48 hours	12 (16.9)	9 (13.2)	0.1
2-5 days	20 (28.2)	31 (45.6)	
>6 days	39 (54.9)	28 (41.2)	

ICU = intensive care unit; HDU = high dependency unit; USS = ultrasound scan; CT = computed tomography; CTPA = computed tomography pulmonary angiogram.
†Fisher exact test used. *Statistically significant at P < 0.05.

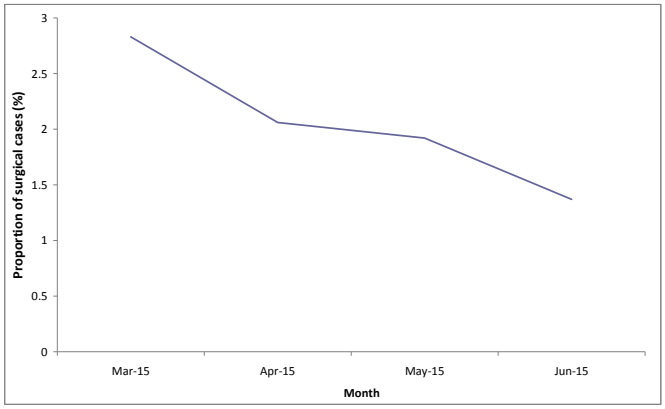

Figure 1 Proportion of total surgical cases transferred from MSC to MMH, following introduction of the huddle.

Table 3 Comparison of management streams pre- and post-huddle.

Management	Pre-huddle	Post-huddle
No change	24 (34.8%)	30 (43.5%)
Active management	45 (65.2%)	39 (56.5%)
Antibiotics/anticoagulation	*28 (40.6%)*	*24 (34.8%)*
ICU/HDU admission	*7 (10.1%)*	*4 (5.8%)*
Theatre/operative intervention	*10 (14.5%)*	*11 (15.9%)*

active management at MMH (Table 3), but these differences were not statistically significant (p = 0.29). The breakdown of different active management streams is also shown in Table 3.

Using logistic regression, there was no significant difference in length of stay for transferred patients before and after the introduction of the huddle in both the adjusted and unadjusted models. Notably proportionately fewer transferred cases in the post-huddle group (54.9% versus 41.2%) had a LOS of 6 or more days (Table 1), but these differences were not statistically significant (p = 0.10).

The only statistically significant variable for LOS was MMH management after transfer (p = 0.0016). The odds ratio for no-change ("passive") management versus active management was 0.189 (95% CI =0.067, 0.533); the odds of more than 6 days' LOS decreased by 81% in the passive management group when compared to the active management group.

Discussion

This analysis of transfer data showed that, the introduction of the "huddle" did not result in a reduction in the proportion of after-hours patient transfers; nor did the "huddle" have any significant effect on transfers during normal working hours. However, there was an associated progressive trend towards a decreasing proportion of total surgical cases being transferred over the post-huddle months.

The principal results of this study turned out to be that the introduction of a new Model of Care, with a formal handover process (the "huddle") was associated with (1) a significant increase in transfers for further imaging such as USS/CT/CTPA at MMH; and (2) a significant increase in the formal diagnosis of VTE events.

Thus it seems that significantly more patients were identified as having possible VTE events and transferred to MMH for investigations that were not available at MSC. Certainly there were significantly more cases of VTE diagnosed in the post-huddle group. We cannot be sure whether this is a result of closer monitoring and better detection or a true increase in VTE rates. We believe that the threshold for transfer to MMH was lowered as a result of the new Model of Care, representing a more cautious approach to the management of patients. Certainly that is the clinical impression among the nursing and peri-operative medicine staff at MSC. The lack of appropriate on-site imaging resources at MSC presents a rate-limiting step in the management of patients where VTE is suspected. Transfers could be avoided if there were local site access to imaging modalities such USS or CTPA. Some may critique that a D-dimer assay may be of utility in such a resource constrained environment. However numerous studies have identified that plasma D-dimer levels are elevated following major surgery and as such is not a useful test in the post-operative setting to identify patients with VTE events [3, 4]. The introduction of the huddle also coincided with organisational changes to patient safety initiatives to reduce VTE events through formal documentation of risk stratification. This may have contributed to a higher index of suspicion of clinical deterioration events caused by VTE.

The low numbers of overall transferred cases is a limitation of this study. The actual overall proportion of cases transferred remained stable at approximately 1.92% over the two 4-month periods. Furthermore, on average 2 cases per month were transferred overnight (between 2200 and 0800) and 1 case per month required admission to ICU/HDU. Given such low numbers it is difficult to attribute any decrease (or increase) in transfers to one single factor such as the introduction of the "huddle". Larger numbers of patients would be required to discern a statistically significant effect. Another limitation of this study relates to the source of identified cases – the CMH patient transfer record. There is potential for this to have been incomplete and thus patient transfers missed and subsequently not included in the study. This is considered unlikely as a transfer involves an ambulance journey and substantial administrative documentation.

Further studies should explore the experiences of other free-standing elective surgical centres, where elective surgery is the predominant focus and acute services are limited (especially after-hours). Additionally, it would be interesting to see whether continuation of the "huddle" is associated with measurable changes in transfer rates in the future. This study looked at a small 4-month period after only 2-3 months using the "huddle" in clinical practice, so it is possible that the true effect of the "huddle" is yet to be seen. The reason for the increased number of VTE cases is speculative at this stage, and needs to be examined more explicitly with a prospective study, taking into account risk factors and VTE prophylaxis protocols – which themselves have continued to evolve since the introduction of the huddle.

While the area of handover communication has been investigated by others, there is a scarcity of research into the application of such processes in the setting of elective surgical centres. Although our study has not shown any significant change in the proportion of patient transfers, it is well established that high quality handover is critical for patient safety in theatre to ICU hand-over processes [3].

The results of this study suggest that a more cautious approach to managing patients post-operatively took place, represented by increases in transfers requiring investigation, without significant changes in active management. The "huddle" continues to be part of our new model of care, as the intention was to identify patients early and prevent clinical deterioration through timely and appropriate management.

Conclusion

The introduction of a new model of care produced no statistical significant reduction in the proportion of patients transferred from MSC to MMH, but was associated with a significant increase in transfers for further imaging such as USS/CT/CTPA at MMH; and a significant increase in the formal diagnosis of VTE events. This suggests that the huddle may have been responsible for a more cautious approach to managing patients at stand-alone short-stay elective surgical centre, where acute services are limited, especially after-hours.

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Rapid access ultrasonography: A novel service facilitating a reduction in time to clinical decisions for patients with acute abdominal pain

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Abstract

Introduction: The Emergency General Surgery (EGS) Commissioning Guide, 2014 has recommended development of pathways for the management of acute abdominal pain. This study aims to evaluate the impact of two different pathways (i) ward-based ultrasonography and (ii) a rapid access to ultrasonography service on the admission pathway for EGS patients at a tertiary teaching hospital.

Methods: A prospective comparison was made between trials of a new ward-based ultrasonography service (n=54) and a rapid access to ultrasonography service (n=66) compared to the existing radiology department based service (n=65). Data for each group was collected over three different five day – weekday periods between November 2014 and June 2016. All EGS patients requiring an ultrasound scan for right upper quadrant or right iliac fossa pain as a first line investigation were included in the study. The following parameters were assessed: (i) time of ultrasound booking to report and (ii) subsequent clinical decision or outcome. Statistical analysis was performed using the independent sample t-test.

Results: Rapid access to ultrasonography showed the greatest reduction in times compared to the existing radiology department based service. The mean time of ultrasound request to report was reduced by 385 minutes ($p = 0.006$) and the mean time of ultrasound report to clinical decision was reduced by 550 minutes ($p = 0.001$).

Conclusion: Rapid access to ultrasonography facilitated reduction in time from booking to reporting of scans and consequently advanced clinical decision-making. It has potential cost benefits, enhances the admission pathway and prevents delays to diagnosis and management.

Keywords: Acute abdominal pain; ultrasonography; outcomes.

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Introduction

The Emergency General Surgery (EGS) Commissioning Guide, 2014 has emphasized the importance of developing surgical pathways for management of acute abdominal pain as it is a frequently encountered presentation in EGS and holds a large inpatient load of varied diagnosis. Additionally, the care and funding for this group of patients have been historically overlooked resulting in inconsistency in their management [1].

Acute presentations including right iliac fossa pain, biliary colic and acute cholecystitis pose significant costs and may account for a large percentage of inpatient admissions. However, development of ambulatory care pathways and acute surgical assessment units may decrease rates of admission within this group of patients by up to 30% and therefore reduce costs [1]. The use of such pathways to ensure rapid access to imaging must be developed and even assigned by means of convention with hospital management [1].

In particular, abdominal ultrasound is a regarded as invaluable imaging modality for assessment of the acute abdomen especially with regards to biliary, gynecological and renal pathology [2,3]. In this study we aim to evaluate the impact of two novel pathways including ward-based ultrasonography and rapid access to ultrasonography services on the EGS admission pathway.

Methods

A prospective comparison was made between trials of a new ward-based ultrasonography service (n=54) and a rapid access to ultrasonography service (n=66) compared to the existing radiology department based service (n=65). During the trial of the new ward-based service all ultrasound scans requested for EGS patients were performed on the emergency surgical unit ward by a radiographer who was available to perform an unlimited number of scans between 0800-1200 hours. Following the success of the ward-based service, a further trial of rapid access to ultrasonography service was established by convention between the EGS team, hospital and radiology department management. This service was located in the radiology department and the majority of patients were able to walk directly to the department rather than wait for porters to transport them. Additionally, these ultrasound scans were performed 'on demand' rather than having fixed designated slots. This therefore conferred more flexibility for EGS patients as ultrasound scans requested 'on demand' were spaced between the existing list and prioritised on clinical urgency. As a result, there was potential to perform an unlimited number of scans being between 0800-1700 hours. Prior to the interventions, the existing radiology department based service constituted of three designated slots for surgical patients between 0800-1200 hours and all scans performed after this were subject to availability by the radiology department.

Data for each group was collected over three different five day weekday periods between November 2014 and June 2016 by the

on-call core surgical trainee or senior clinical fellow. Data for the control group of the existing radiology department service and trial of ward-based ultrasonography group was collected between November 2014 and April 2015. Data for the trial of the rapid access to ultrasonography group was collected between April 2016 and June 2016.

All EGS patients suitable for an ultrasound scan for right upper quadrant or right iliac fossa pain as a first line investigation rather than other indicative imaging such as computed tomography (CT) or MRCP were included in the study. The following parameters were assessed: (i) time of ultrasound booking to report and (ii) subsequent clinical decision or outcome. Statistical analysis was performed using GraphPad Prism version 6.0 software and the independent sample t-test was applied. A p-value <0.05 was considered statistically significant. The study was registered as an audit with the necessary institutional approval covering ethics. Preparation of the manuscript was in accordance with the Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) guidelines [4].

Results

The control group (existing radiology department based scans) consisted of 65 patients. The mean booking to report time for abdominal ultrasound was 712 minutes and median was 341 minutes (range 5-5351 minutes). The mean report to outcome time was 687 minutes and median was 191 minutes (range 0-7664 minutes) (Table 1).

The first trial group (ward-based scans) consisted of 54 consecutive patients. The mean booking to report time for abdominal ultrasound was 433 minutes and median was 171 minutes (range 2-1782 minutes). The mean report to outcome time was 606 minutes and median was 170 minutes (range 0-4515 minutes). The mean booking to report time was reduced by 279 minutes compared to the control group ($p = 0.075$). The mean ultrasound report to outcome time was reduced by 81 minutes compared to the control group ($p = 0.699$) (Tables 1 and 2).

The second trial group (rapid access to ultrasonography based scans) consisted of 66 patients. The mean booking to report time for abdominal ultrasound was 327 minutes and median was 170 minutes (range 6-1276 minutes). The mean report to outcome time was 137 minutes and median was 69.5 minutes (range 1-1345 minutes). The mean booking to report time was reduced by 385 minutes compared to the control group ($p = 0.006$). The mean ultrasound report to outcome time was reduced by 550 minutes compared to the control group ($p = 0.001$) (Table 2).

Discussion

The Emergency General Surgery Commissioning Guide 2014 has advocated the development of care pathways to improve the quality of care of surgical patients. However, there have been no previous studies assessing the efficacy of the impact of ward-based and rapid access to ultrasonography on the EGS pathway although currently some surgical units have been granted daily radiology department based ultrasonography slots for acute surgical admissions [1]. Nonetheless, these slots may be limited and access to these may be difficult depending on the time of booking, availability of ultrasonographers and porters as well as the location of the radiology department. With introduction of ward-based and rapid access to ultrasonography services we addressed such limitations. We have demonstrated that the care pathway at our institution for EGS patients was enhanced as the mean time of ultrasound request to report and clinical decision was consistently reduced with implementation of each service. However, rapid access to ultrasonography showed greatest reduction in times compared to the ward-based ultrasonography and existing radiology department based service. The mean time of ultrasound request to report was significantly reduced by 106 minutes compared to the ward-based ultrasonography group and by a total of 385 minutes compared to the existing service ($p = 0.006$). Additionally, the mean time of ultrasound report to clinical decision was also significantly reduced by 469 minutes compared to the ward-based ultrasonography group and by 550 minutes compared to the existing service ($p = 0.001$). No patient in the rapid access to ultrasonography group waited greater than 24 hours for either ultrasound report or clinical decision compared to 90 hours and 128 hours respectively in the control group of the existing service.

During the trial of the ward-based service, patients were asked to directly walk to the ultrasound investigation room located within the emergency surgical unit ward. Following the success of the ward-based service a further rapid access to ultrasonography service was established and whereby patients were able to walk directly to the radiology department for an 'on demand' ultrasound scan. These scans were spaced between existing slots on the radiographers list

Table 1 Ultrasound request to reporting (minutes).

	Existing service (N=65)	Ward-based ultrasound (N=54)	Rapid access ultrasound (N=66)
Mean	712	433	327
Median	341	171	170
Range	5-5351	2-1782	6-1276
p value	-	0.075	0.006

Table 2 Ultrasound request to reporting (minutes).

	Existing service (N=65)	Ward-based ultrasound (N=54)	Rapid access ultrasound (N=66)
Mean	687	606	137
Median	191	170	69.5
Range	0-7664	0-4515	1-1345
p value	-	0.699	0.0005

and were prioritised on clinical urgency. Therefore, no additional resources were incurred and successful implementation of the service required radiographers to be flexible and accommodating for EGS patients. Both new services therefore helped reduce portering times. Patients unable to walk to have a scan were personally transferred by surgical staff compared to the control group (existing service) where patient transport to the radiology department was dependent on the availability of porters. This therefore incurred additional costs and may have influenced delay in time from ultrasound request to report and subsequent clinical decision. Overall, although initially these services were introduced on a trial basis, each service showed consistent improvement in outcomes. The rapid access to ultrasonography service showed the most significant improvement and was found to be a practical and sustainable service. Through continued collaboration with the radiology department this has shown long-term quality improvement. Therefore, since the second phase of they study i.e. rapid access to ultrasonagraphy we have not returned to the previous service.

Further improvement to our service may be achieved by the following: (i) Availability of a permanently designated ultrasound room for the EGS patients and availability of ultrasonography for a full 7-day period rather than a 5-day week-day period (ii) A dedicated ultrasound machine and ultrasonographer to provide this service between 0800-1700 hours and (iii) Training of surgeons to perform abdominal ultrasounds which will be particularly useful in the out-of-hours setting. Additionally, report to outcome or clinical decision times can be improved by ensuring that the ordering clinician is contacted by the radiographer immediately after the scan results are made available in order to in ensure urgent senior review (MRCS qualification or above) for making clinical decisions and aiding management outcome.

Conclusion

The rapid access to ultrasonography service reduced the time from booking to reporting of scans and consequently advanced clinical decision making and outcomes compared to the ward-based ultrasonography and existing radiology department based service. It has potential cost benefits, enhances the patient admission pathway, prevents delays to diagnosis and management. The service incurred no additional resources or costs and has shown long-term sustainable quality improvement for EGS patients.

Conflict of interest

The authors declare that they have no conflict of interest.

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Review of Day Surgery cases at a One Day Surgery Centre

T. Naresh Row

Abstract

A retrospective analysis was done of 10,635 surgical cases performed over a period of 10 years, at One Day Surgery Center, a stand-alone Multi-speciality Day Surgery Center in Mumbai.
Standard Operative Procedures (SOP) have been developed based on recommendations of the IAAS and The Indian Association of Day Surgery. Protocols for patient selection, preparation (including counselling) and discharge, were prospectively followed. Cases were divided as: OPD: 2748 cases (25.83 %), Day Case: 5041 cases (47.40 %) and Extended / Short stay (up to 48 hrs.): 2846 cases (26.76 %). The number of day cases were found to be maximum in this analysis, with less than 0.02% complications. In conclusion, protocols increase patient safety and the efficacy of a successful functioning of DCS Centre. Day Surgery is also fast becoming an accepted norm for dispensing planned surgeries in India.

Keywords: Multispeciality, Day surgery, One Day Surgery, Stand-alone, Day Care Surgery.

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Introduction

Ambulatory Surgery (AS) is defined as operations or invasive procedures performed and discharged on the same working day. Anaesthesia may range from loco-regional blocks to brief general anaesthesia. These major procedures warrant a fully equipped operating theatre with a recovery room/bay. Post-operative observation for a few hours is necessary in most cases. Minor/OPD/Office procedures and Endoscopies are usually not considered as AS.

AS has gained popularity only recently, in our country. This may be due to the fact that there is lack of awareness about Ambulatory Surgery among our doctors and patients. Day Surgery has been in use in some developed countries, like the United Kingdom, over a hundred years ago in 1909, in an article was published on Day Surgery of 7392 children, operated in Glasgow (1).

Therefore, a true Day Case is a patient who is admitted for an operation on a planned non-resident basis and who nonetheless requires facilities for recovery. The whole procedure should not require an overnight stay in a hospital bed (2).

Aim

Cases were analyzed at One Day Surgery Centre to establish feasibility, patient safety and efficacy of protocols proposed by The Indian Association of Day Surgery.

Material and Methods

Place of study: One Day Surgery, Mumbai, India. Which has one OR and 15 recovery/Day Surgery beds. All patients prospectively admitted for surgery, between May 2007 to April 2017.

Total number of cases admitted: 10,635.

Surgical patients were divided into:

1) OPD (Minor) Procedures: 2748.
2) Day Case Surgeries: 5041 (Table 1).
3) Extended / Short Stay: 2846.

Medical Protocols followed:

Patient selection:

- Age: greater than 6 months.
- Medically fit and stable patient. (ASA I & II).
- Well-motivated and psychologically / mentally stable.
- Provision of toilet, transport, telephone, and
- Responsible career at home.

Patient Preparation:

- Examination and diagnosis.
- Routine investigations: Haemogram, Blood sugar, Triple H, Urine, X-ray Chest, ECG, USG, Liver & Kidney function test if necessary. Any other test as per requirement.
- Medical Fitness (Physician/Cardiologist/Diabetologist/Anaesthesiologist).
- Overnight fasting.
- Bowel preparation, if necessary.
- Pre-op instruction on medication, e.g. stop Aspirin 3 days before surgery.
- Use of anxiolytic or sedative for a good night's sleep.
- Prophylactic antibiotic was given on admission.

1. Anaesthesia used:

- Local anaesthesia: 2% Lignocaine HCL with or without adrenaline, mixed with equal quantity of 0.5% Bupivacaine or Ropivacaine 7.5 mg, injected through a 27G needle. Sedation where required.
- Blocks: Pudendal, Ring, Field, Inguinal, Scrotal / Cord / Coastal / Saddle.
- Short General Anaesthesia: Inhalation or IV.
- General Anaesthesia.

2. Discharge Protocol:

- Patient should be fully conscious.
- Haemodynamically stable.

Table 1 Postanesthetic Discharge Scoring System (PADSS). -

Procedure	N	Procedure	N
Hernia repair	554	D&C	324
Excision of Haemorrhoids	827	Anterior repair	128
Varicocoele	152	Diagnostic laparoscopy	432
Anal fistulectomy	187	Ptosis correction	2
Anal fissure excision	70	Intraocular lens	4
Orchidopexy	19	Blepharoplasty	1
Circumcision	143	Burns dressing	19
Gynaecomastia excision	25	Liposuction	91
Pilonidal sinus excision	104	Hare Lip correction	2
Perianal/Rectal abscess	62	Skin grafting	98
Parotid cyst excision	2	Nipple correction	4
Cholecystectomy	4	Breast augmentation	37
Diabetic toe excision	175	TURP	1
Laparoscopic Ovarian Cyst	76	Hypospadias correction	2
MTP	32	Epididymal Cyst excision	24
Sub Mucous Resection	36	Hydrocoele	209
Tympanoplasty	5	Testicular Biopsy	101
Tonsillectomy	31	Breast lumpectomy	210
I&D Abscess	372	Urethral Dilatation	6
Lymph node biopsy	279	Cystoscopy	23
Nasal Polypectomy	25	Cervical Cautery	86
Vasectomy	21		
		Total	**5093**

No giddiness on standing.
- Able to walk without vomiting.
- No or minimal pain.
- Passed urine.
- Responsible patient is present to take patient home.
- No surgical complications.

3. On Discharge:

- Written instructions.
- Verbal instructions.
- Contact numbers of all our team, including the operating surgeons, in case of any questions and complications.
- Instructions on how to look for complications and its management: train the patient, relatives, staff and Family physician.

Procedure for anaesthesia:

Different types of anaesthesia were used as per surgery and surgeons preferences. These were explained to the patient at the time of counselling.

Most common types with combinations at the Centre were:

- Loco-regional Blocks.
- Short GA.
- General Anaesthesia.

The most commonly used material for local anaesthesia in day to day surgery at our center was a combination of 2% lignocaine HCl (with or without Adrenaline) and 0.5% Bupivacaine or Ropivacaine 7.5 mg. Mixed in equal quantity, dose can be calculated based on the patient's weight. Recommended dose for 2% lignocaine without adrenaline is 4.5 mg / kg body weight, maximum 300 mg, with 1:80,000 adrenaline 7 mg / kg body weight, maximum upto 500 mg. 0.5% bupivacaine can be given upto 175 mg in an adult, as a single dose. (3) Dose of Ropivacaine is 7.5 to 220 mg for infiltration purpose.

Injection for the block is administered with a 27 G long needle. At the time of injection, patient is sedated, with Midazolam (1 -2 mg) and Pentazocine (15-30 mg) / Fentanyl (25-50 mg). This avoids anxiety and pain felt during administering the block.

Inhalation anaesthesia, either by tracheal tube, Laryngeal Mask or 'I-Gel', were used in these patients, Halothene/Isoflorine/Nitrous Oxide and Oxygen were used in different patients, according to the choice of the anesthetist.

Post-Operative Management

Usually, intravenous fluid is restricted to 500ml and the patient is encouraged to start fluids orally, as soon as possible. Mobilization is done as early as possible, first, on the bed, then out of bed. Care should be taken to support the patient or wait until giddiness has resolved. Oral intake is initiated within 2 to 3 hours, with water first and then followed by tea and biscuits, unless it is necessary to be nil-by-mouth for a longer time.

The average hospital stay for a Day Surgery case is 6 hours with follow-up after 48 hrs.

Discharge protocols were followed in every patient.

Complications

Two patients, presented with complications post-operation. A patient undergoing ventral hernia repair with a BMI of 40, was readmitted for signs of cellulitis in one leg, as a precaution, Intravenous antibiotics and limb elevation with gentle physiotherapy was initiated, with a suggestion of colour doppler to be done as a follow-up. Another patient was readmitted for 'Spinal Headache' and treated conservatively by IV fluids and oral analgesia.

Results

Prospective selection of cases for surgery in a specific category and its retrospective analysis, has brought out, an equivocal result. 2 out of 10,635 patients operated at the Center were readmitted. Therefore, present overall re-admission rate is calculated as: 0.02%. In the Day Surgery cases, no readmission or complications were seen. Day Surgery cases are far more than the Short stay cases.

Discussion

There are several definitions for Day Surgery in different parts of the world, One Day Surgery, Day-case, Ambulatory surgery, are a few commonly used nomenclature to describe Day Care Surgery. In some countries, they are extended to include a discharge process of upto 23

hours. The first proposal for a unified terminology was put forward by Roberts and Warden in 1998 (4).

The Indian Association of Day Surgery and The International Association for Ambulatory Surgery have suggested certain protocols, which are for patient selection and preparation, type of surgeries, discharge criteria and minimal requirements for a DSC, which, are for the safety of patients and better efficiency of the surgical centre (5).

There are several classification of cases in a DSC, most commonly used are Major Ambulatory Surgery, Minor Ambulatory Surgery, Day Case, Day Care, 23 hrs stay, Short stay, etc. We have used Major Ambulatory surgery and Short stay for cases up to 48 hrs and beyond. OPD cases are not true Day Surgery and hence, should not be included. They are merely indicative of the percentage of cases performed at the Centre (6).

A Day Surgery Centre (DSC) is a miniature hospital. It consists of Operation Theatre, recovery area / rooms, staff duty rooms, reception, waiting rooms and doctors changing room / lounge. Additionally, pantry, store, linen and autoclaving room. One Day Surgery Center is a Stand-alone DSC, which is ISO 9001-2008 and FEQH of QCI Certified as 'Optimum'.

Medical Protocols are strictly followed and implemented. Patient Selection was broadly based on the fact that infants and children below 6 months would require monitoring and can go into dehydration very fast, therefore, not ideal for Day Surgery. American Society of Anesthesiologists (ASA) have classified patients on the basis of their physical condition, therefore, ASA I and II were usually chosen for Day Surgery. In some cases, a well-controlled ASA III class of patient can be taken for Day Surgery. (7)

There are three major types of Day Surgery Centres, incorporated in the hospital building itself, like a separate ward with common dedicated OT/OR. Or even separate OT/OR and ward, but, same staff. These are self-contained units or wards in the hospital. Integrated: in the hospital complex, but, independent of the functioning of the hospital. They have separate staffing as well as accounting, but, situated in the hospital compound. Free Standing or Stand alone: centers can be single or multi-specialty. As the name suggests, they are outside of a hospital complex, that is, independent units. Like any existing Nursing Homes or small hospitals, they are self-sustaining units with all basic amenities. (8,9) Among all these, the Stand-Alone model is the most efficient and economical. Probably, it utilizes all positive aspects of Day Surgery and reduces overhead costs. (10)

A General Surgeon's regular OT list does not contain Hepatectomy, Colectomy, Parathyroidectomy and Pancreatectomy as part of the list of common surgical procedures, given their relative rarity. Circumcision, incision and drainage of Paronychia and scar revision are very common, and in fact perhaps more numerous than those listed above. (11)

Patient preparation would mean examination, investigation and surgery. This scheme of management, can be applied to all category of patients. Investigations with relevance to the type of surgery. Medical fitness wherever required. Advice regarding overnight fasting and per-operative medication is self-evident.

Most important step while preparing the patient is the counselling for surgery, particularly, Day Surgery. Not only is it necessary for the patient to understand that they will be discharged on the same day, it would also mean to be able to accept conscious anesthesia. They have to be advised regarding the disadvantage as well as advantages of Day Care Surgery. Patients counseling by the operating surgeon, is more effective than an assistant or Nurses counselling.

Discharge protocols help to ensure that the patient has completely recovered from the surgery and anesthesia. That they have understood the implications of going home and fully understood how to look after themselves and communicate on their own or with the help of their relatives, the referring doctor, if necessary. We must ensure that all instructions are written down and explained to the patient and their relatives, make sure that it has been understood, any query, is to be answered. This requires training of the staff, specifically for this purpose.

In the hospital, we make sure that the patient is fully conscious, oriented, able to walk, take orally and having passed urine, in relevant cases. Further, does not have any complication, then they are fit to be discharged. Presence of a responsible person is a must to take the patient home. Driving by the patient on the day of discharge is not encouraged. A home visit or a phone call or a WhatsApp message on the day of discharge, if necessary, but, mandatory on the next day, usually helps in reassuring the patient as well as ourselves as to know that everything is normal.

Conclusion

Protocols proposed for Day Surgery, implemented meticulously, provides patient safety and overall success of the Day Surgery Center. A careful patient selection and counselling, goes a long way in increasing the efficacy of the DCS Centre.

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