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Day case inguinal hernia repair under local anaesthesia with sedation

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A series of 639 consecutive unselected patients with inguinal hernias were scheduled for ambulatory hernia repair. The objective of the study was to determine the feasibility of the method using local anaesthesia in combination with propofol sedation. Ninety-five per cent of the patients were discharged the same day. Overall morbidity was 5.9%. There was no mortality. Patient acceptability was high (92%). Our method is applicable to all types of inguinal hernias allowing the ambulatory treatment of patients with large or bilateral hernias.

Key words: Inguinal hernia repair, ambulatory surgery

Introduction

A significant amount of progress has been made in the last decade in expanding the use of ambulatory surgery for the repair of inguinal hernias[1,2]. A separate day care unit was opened at Hospital El Tomillar (Area Hospitalaria Valme) in early 1992, to facilitate the movement from inpatient to outpatient care for patients with inguinal hernias. The population of our National Health District is mainly rural, low-income and often travels long distances to the hospital.

Our objective was to determine the feasibility of ambulatory hernia repair using local anaesthesia in combination with propofol sedation in the Department of Health Care in Seville.

Patients and methods

The study population comprised all patients (n = 710) attending the outpatient clinic of our surgical day unit during a two year period. There was no selection of the type of inguinal hernia accepted for surgery. Inclusion criteria were: (a) patient acceptance; (b) anaesthetic risk (American Society of Anesthesiologists) ASA I, II or III with systemic diseases well controlled preoperatively; (c) social (housing conditions, telephone, responsible accompanying person). Six hundred and thirty-nine patients were scheduled for ambulatory hernia repair. Day patients were admitted between 8 and 8.30 a.m., operated on during the morning, and discharged in the late afternoon. Seventy-one patients (10%) were excluded for the criteria (a), (b) or (c) and were treated as inpatients. Of the 639 patients, 595 (93%) were men and 44 (7%) were women with an age range of 12–84 yr (mean 49 yr). The weight range was 25–110 kg (mean 74 kg). The anaesthetic ASA ratings were: 390 ASA I (61%), 217 ASA II (34%) and 32 ASA III (5%).

Table 1. Hernia type. Primary and recurrent hernias

Hernia type	*Primary* n	%	*Recurrent* n	%	*Total* n
Indirect	354	58.6	49	42.9	403
Direct	196	32.4	58	50.9	254
Combined	55	9	7	6.2	62
Total	605	100	114	100	719
80 Bilateral repairs					

The hernia anatomic types are shown in Table 1. Eighty patients had bilateral hernia operation at one time. There were 114 (15.9%) recurrent repairs. We used antibiotic prophylaxis (cefotaxim 1 g), in procedures expected to involve the insertion of prosthetic material (polypropylene mesh, Marlex).

Anaesthestic technique

In the operating room all patients were premedicated by the anaesthesiologist with 2 mg of midazolam and 1–1.5 ml of fentanest iv. This was followed by a bolus of propofol 0.3–0.5 mg kg^{-1} and the simultaneous administration of a slow propofol infusion with an infusion pump at an initial rate of 4 mg kg^{-1} h^{-1} and local infiltration (by the surgeon) with 0.25% bupivacaine plus

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Table 2. Surgical techniques

	No. of cases	*%*
Bassini-Shouldice	289	40.2
Lichtenstein	391	54.4
Ferguson	29	4.0
Plug	10	1.4
Total	719	100

Table 3. Times of discharge

Times	*No. of cases*	*%*
Same day (0–6 h)	607	95
24 hours	21	3.2
>48 hours	11	1.8
Total	639	100

Table 4. Early complications

	No. of cases	*%*
Wound bleeding	3	0.4
Haemoperitoneum	1	0.1
Femoral nerve block	6	0.8
Total	10	1.3

Table 5. Late complications

	No. of cases	*%*
Wound seroma	5	0.7
Haematoma	15	2.0
Abcess	4	0.5
Scrotum haematoma	9	1.3
Total	33	4.6

1 : 200 000 epinephrine. The propofol infusion rate was adjusted according to the clinical response, but without preventing the patient's cooperation. Systolic and diastolic arterial pressures and ECG were monitored throughout the operation. Arterial oxygen saturation was measured continuously with a pulse oximeter.

The operations were performed by a consultant or a senior surgical registrar. After exposure of the inguinal region, the patient was asked to cough and to strain, thus any defect was accurately outlined. We routinely did an intraoperative stress test after the repair was completed. We irrigated the wound at the completion of the procedure with an additional 4 ml of bupivacaine. The surgical techniques are shown in Table 2[1,3–5]. Bilateral hernias were repaired consecutively under the same anaesthetic.

After the operation, patients stayed in the recovery room for 30 min and were then returned to the ambulatory area where they were requested to walk every 15 min. When the patients could void and walk they were released home. Each patient was given written instructions, an explanation of the possibility of bleeding and occasional ecchymosis. Patients were also instructed to take the analgesic tablets on arrival home whether pain-free or not. Patient follow-up was by telephone or domiciliary visit by nurses of our Home Hospitalization Service (specially trained nurses from our surgical day unit). Satisfaction with care was measured by a standard questionnaire 2 months after surgery.

Results

The average operative times were 34 min for unilateral hernia repair, 61 min for bilateral and 41 min for recurrent hernia repair. Six hundred and seven patients (95%) left the hospital as day cases (Table 3) with a mean time spent in the day unit of 4 h. Thirty-two patients (5%) could not be discharged home the same day because of severe pain (two cases), early complications (10 patients), patient's preference (nine cases), geographical factors (seven cases) and inappropriate selection (four patients).

Morbidity (5.9%) is shown in Tables 4 and 5. No adverse reactions occurred during or after sedation. No urinary retention or chest infection was encountered. There was no mortality.

The home management of the patients was by our home care service in 566 patients (88.5%) and by telephone in 73 patients (11.5%). Minor pain was experienced by 543 patients (85%), moderate pain by 89 patients (14%) and severe pain by 7 patients (1%). Only three patients (0.4%) required readmission after discharge from hospital.

Seventy-two per cent of questionnaires were returned 2 months after operation. The degree of satisfaction with the ambulatory hernia repair was 92%. The information (pre- and postoperative) was reported to have been adequate by 87% of the patients. One hundred and twenty-seven patients (20%) had had a previous inpatient repair and all these patients preferred the day case procedure. Seventy-five per cent of the patients returned to their normal occupation in 4 weeks.

Discussion

Nearly all groin hernioplasties can be performed safely on a day-patient basis[3,6,7]. Propofol sedation in combination with local anaesthesia is a safe alternative, decreasing the fear and anxiety of patients and allowing the ambulatory treatment of patients with large or bilateral hernias[8,9]. Our results support this belief; 95% of patients could be discharged the same day. This is important to the patients by reducing disability and encouraging them to return to their homes, usual diet and activities immediately. To the family of the patient, it eliminates the concern and the inconvenience of trips back and forth to the hospital.

The use of bupivacaine with epinephrine has the ability to produce long-lasting postoperative pain relief for

up to 6–8 h[7–10]. Such relief can be extended to 12 h postoperatively by irrigating the wound at the end of the procedure with an additional 4–5 ml of 0.25% bupivacaine[10]. This method of reducing postoperative pain allows an earlier discharge.

The overall morbidity rate of 5.9% is similar to rates reported by others[1,7,11]. No urinary retention was encountered, which compares favourably with rates of 13% in patients when using general or spinal anaesthesia[9–12]. There was no mortality.

Patient acceptability was high. Ninety-two per cent of patients who returned the questionnaire favoured the procedure and said they would have it performed in the same way again if required. The most grateful patients were those who had had previous repairs under spinal or general anaesthesia and were hospitalized.

Apart from pain, uncertainty about the postoperative course is an important reason for the patient being reluctant to go home after a hernia repair[13,14]. In our experience, the Home Hospitalization Service has been a valuable means to offer security to the patients and to decrease the level of uncertainty about the postoperative care.

Recurrence rates are beyond the scope of this study. In forthcoming papers we will determine the long-term outcome following our method of hernia surgery.

We conclude that the ambulatory treatment of most groin hernias is feasible in our Health Care District, offering important social and economic advantages. Our results are sufficiently promising to encourage the continuation of this method for the repair of most inguinal hernias. The key to successful ambulatory hernia repair is having a facility with a clear separation of the ambulatory from the inpatient area.

References

1 Glasow F. Inguinal hernia repair using local anaesthesia. *Ann R Coll Surg Engl* 1984; **66**: 382–7

2 Devlin HB, Gillen PHA, Waxman BP, MacNay RA. Short stay surgery for inguinal hernia: experience of the Shouldice operation, 1970–1982. *Br J Surg* 1986; **73**: 123–4

3 Lichtenstein IL. Hernia repair without disability. St Louis: CV Mosby, 1987; 216–21

4 Ferguson AH. Oblique inguinal hernia: typical operation for its radical cure. *JAMA* 1899; **33**: 6–14

5 Lichtenstein IL, Shore JM. Simplified repair of femoral and recurrent inguinal hernias by a 'plug' technique. *Am J Surg* 1974; **128**: 439

6 Baskerville PA, Jarrett PE. Day case inguinal hernia repair under local anaesthetic. *Ann R Coll Surg Engl* 1983; **65**: 224–5

7 Flanagan L, Bascon J. Repair of the groin hernia. Outpatient approach with local anesthesia. *Surg Clin North Am* 1984; **64**: 257–67

8 Lungren S. Sedation as an alternative to general anesthesia. *Acta Anaesthesiol Scand* 1987; **32**: 21–3

9 Finley RK, Miller SF, Jones LM. Elimination of urinary retention following inguinal herniorraphy. *Am Surg* 1991; **57**: 486–9

10 Bats RA, Barry L, Vasilenko P. The use of bupivacaine in elective inguinal herniorraphy as a fast and safe technique for relief of postoperative pain. *Surg Gynecol Obstet* 1991; **173**: 433–7

11 Serpell JW, Jarrett PE, Johnson DC. A prospective study of bilateral inguinal hernia repair. *Ann R Coll Surg Engl* 1990; **72**: 299–303

12 Abdu RA. Ambulatory herniorraphy under local anesthesia in a community hospital. *Am J Surg* 1983; **145**: 353–6

13 Kirby RM, Skilton JS. Day-case surgery. *Lancet* 1991; **338**: 1529

14 Salet GAM, Go PMNYH. Patient survey after inguinal hernia repair in ambulatory surgery. *Amb Surg* 1993; **1**: 194–6