Incisional Hernia in Major Ambulatory Surgery

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Abstract

Aims: To examine the use of the ambulatory surgery unit for selected incisional hernia repairs.
Method: A retrospective study of incisional hernia repairs performed from 01/01/2004 to 31/12/2015. Data were collected regarding: sex, age, previous laparotomy, hernia type, complications and recurrence.

Results: The total number of interventions was 1251. A total of 252 interventions (23.3%) were performed in an outpatient setting. Seven postoperative complications and 20 (8.1%) recurrences were observed.
Conclusions: Incisional hernia repair can be performed in an outpatient setting, as the results of effectiveness and safety are comparable to results obtained for inpatient surgery.

Keywords: eventration, outpatient, mesh repair, sublay, complications, incisional.

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Introduction

Incisional hernia is a common long-term complication after abdominal surgery, occurring in 12-15% of patients and accounting for 50% of all abdominal wall interventions in a General Hospital [1]. Other complications include chronic respiratory failure in severe cases. In general, mortality from the condition is only 0.24%, although, if strangulation occurs, then mortality can be as high as 10% [2]. As incisional hernia is a common condition, it results in a high cost for any healthcare system, estimating an average cost of 4,000 euros (4,705 dollars) per patient when surgical treatment is performed [3].

Incisional hernia repair in an ambulatory setting is possible in selected patients. It has considerable advantages over inpatient surgery, as it minimizes the risk of surgical site infection, reduces the length of hospital stay and minimises the social impact on patients′ daily lives. Importantly, ambulatory incisional hernia repair offers the same effectiveness and safety as inpatient surgery, with similar recurrence and complication rates [4]. Furthermore, it reduces the waiting-list volume and also decreases the economic cost by between 30% and 50% [5].

Given this evidence, we performed a review of all incisional hernia repairs performed at the MAS (Major Ambulatory Surgery) Unit in our hospital to determine its safety and effectiveness, comparing our results with those reported in the current literature.

Methods

A descriptive, observational and retrospective study was carried out on all patients diagnosed for incisional hernia and subjected to surgical treatment in the MAS Unit of the Hospital Universitario Santa Cristina. The study period ran from January 2004 to December 2015.

Inclusion criteria

We included all patients greater than 18 years of age who underwent an elective surgical procedure. All the incisional hernias included met the general criteria defined by national MAS guidelines [1], which are shown in Table 1. Only small or medium sized hernias (with a maximum orifice diameter of 6 cm) were included in the study. This selection was carried out by the consulting surgeon.

Table 1 Selection Criteria.

Medical Criteria
• ASA 1, 2 or stable 3 patients
• Unlimited age , taking into consideration, biological age
• The following patients should only be selected in expert units under a strict protocol
• Insulin dependent diabetics
• Chronically anticoagulated patients
• Stable heart disease
• Physical defect (blindness, deafness)
• Psychological defect (psychiatric disease, mental handicap)
Psychological Criteria
• Comprehension capacity
• Stable personality
• Positive and collaborative attitude
• Voluntary consent
Social Criteria
• Adult monitoring for at least the first two postoperative days
• 60 minutes travel distance from the hospital
• Adequate hygienic domiciliary conditions
Surgical Criteria
• Elective Surgery
• Minimum bleeding risk
• No cavity opening except in laparoscopic procedures
• Early oral tolerance
• Prolonged immobilisation not required
• Postoperative pain properly treated with oral analgesia
• Avoidance of drainage devices

Surgical technique

All the patients underwent an incisional hernia repair using prosthetic mesh. An open approach was used in all cases. The surgical technique was decided intraoperatively taking into account the defect size,

location,and the general condition of the abdominal wall. Thus, the following techniques were used:

a) Ventral hernia repair with a Ventralex or Ventralex ST mesh (Bard Davol, Rhode Island, USA) [Editor's note: Ventralex mesh is currently the subject of a number of lawsuits citing complications such as bowel obstruction, mesh migration, infection and adhesions]. The incision was made over the hernia protrusion, then the dissection of the hernia sac and neck was carried out. Once the sac was released, their contents were taken back to the peritoneal cavity. The mesh was placed in a preperitoneal position in all cases where where posible, otherwise, an intraperitoneal mesh placement was used.
b) Rives technique incisional hernia repair (component separation technique): After the release and reduction (with or without invagination) of the hernia sac, an opening of the rectus abdominis anterior sheath was performed. Then the space between the posterior sheath and the rectus abdominis muscle was dissected until the perforating vessels were clearly seen.

Progrip mesh (Medtronic Minneapolis USA) or Adhesix mesh (Bard Davol, Rhode Island USA) were placed over the defect and fixed at the lateral edges of the muscle. This technique was only performed in selected patients, as it may be unsuitable for patients undergoing ambulatory surgery

Regardless of the technique used, all patients received a compression bandage and abdominal elastic girdle which was maintained for two months. Antibiotic prophylaxis was performed with amoxicillin-clavulanic acid 1G. (single dose). The thromboembolic prophylaxis protocol was always followed with the use of enoxaparin 40mg s/c and the confirmation of early mobilization and adequate ambulation of the patient before deciding its withdrawal.

Collection and analysis of data

The following data was recorded and analysed: age, sex, comorbidities, previous incision (median laparotomy, subcostal, McBurney, pararrectal..etc),type, location and size of the incisional hernia, area of the abdominal wall defect, surgical technique, surgical time, length of hospital stay (days), complication and recurrence rate. A descriptive analysis of the data was carried out, using the STATA Statistics Data analysis software version 22.0.

Results

A total of 1251 incisional hernia interventions were performed, of which only 1081 could be analysed due to absent data. As shown in Figure 1, the number of incisional hernia repairs in our institution has increased considerably from 8 in 2004 to 178 in 2015. Of the 1081 interventions, 252 (23.3%) were performed in an outpatient setting. The percentage of patients successfully managed as daycase has also experienced growth recently, standing at 25.01% in the last 5 years (Figure 2). The patient characteristics were as follows: 106 were male (42%) and 146 female (59%). The mean age was 50.56 years (SD: 12.74). Twenty-eight patients (11%) were smokers at the time of the intervention. and 47 patients were classified as obese (19%), defined as BMI> 30. The prior incision was a midline laparotomy in 42% of cases and a lateral incision in 8%. In the remainder of the patients (50%), the incisional hernia occurred through a trocar port site due to a previous laparoscopic intervention. The majority of hernias were periumbilical in nature with 5 patients having more than one hernia. The average size of the adominal wall defect was 2.70cm x 2.47cm, with a mean area of 8.08 cm^2.

The surgical technique is shown in Figure 3. The preperitoneal ventral hernia repair (74%) was the most frequent procedure, followed by the intraabdominal repair (20.7%). The Rives technique with retromuscular placement of the prosthesis was only performed in 4%

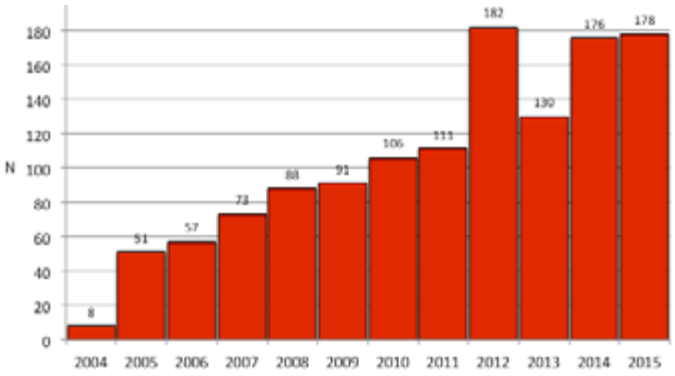

Figure 1 Total number of Incisional Hernia repairs performed.

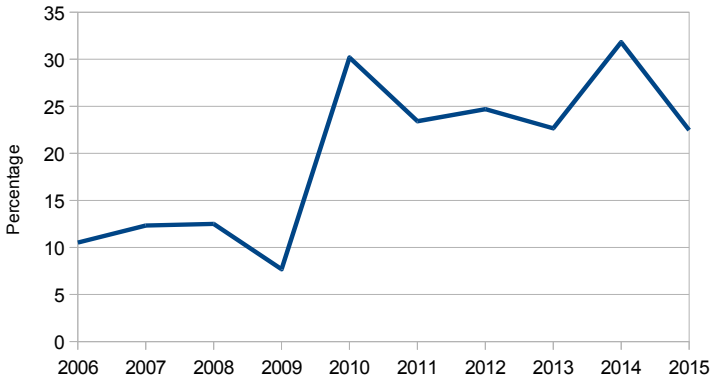

Figure 2 Percentage of procedures successfully conducted as day surgery.

of the patients. The most used mesh type was Ventralex ST (79.8%) with a size of 6.4 x 6.4 cm. In 4 patients a suction drain was left in situ but all were removed before discharge. Postoperative complications are detailed in Figure 4. Despite three of them occurring in obese patients, there was no statistically significant difference in the complication rate between obese and non- obese patients (p = 0.09). The rate of recurrence was 8.13% (20 patients), with a mean follow-up of 3 years (SD: 1.6).

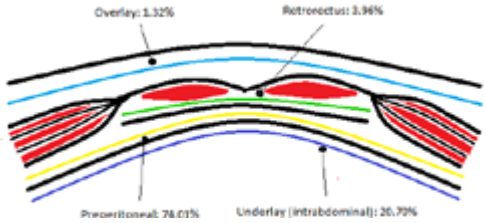

Figure 3 Prosthetic Mesh placement.

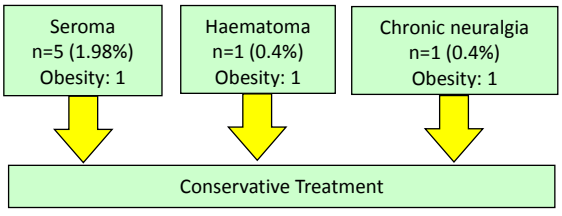

Figure 4 Postoperative Complications.

From the anaesthetic viewpoint, 177 (70%) received regional anaesthesia while in 55 (22%) general anesthesia was performed. The remaining 20 (8%) cases received only local anaesthesia and sedation.

Discussion

The growth of ambulatory surgery in Spain has been evident in recent years [6]. With regard to ambulatory incisional hernia repair, the selection criteria for outpatient surgery remains to be defined. Most published studies are retrospective reviews, performed in a single centre, and with a suboptimal sample size, suggesting a decrease

in morbidity in ambulatory patients compared to those who were hospitalized [7, 8]. Fischer et al., in a study involving 1,706 patients, noted major complications in only in 3.9% of procedures [9].

In our own institute a conversion to ambulatory surgery has provided a considerable financial saving [5]. Our recurrence rate for our ambulatory procedures using prosthetic mesh is between 0 and 10%, which is less than or equivalent to our results for inpatient surgery [3,10]. However even better results were published by Donati et al., with no recurrences at all in a series of 29 patients operated in an outpatient setting [11]. Also noteworthy is the low recurrence rate of 2.4%, found by Acevedo et al. in 2006 with a sample size of 90 patients [12].

The criteria for incisional hernia repair on an ambulatory basis remain ill-defined. Donati et al suggest that the maximum diameter of the hernia sac should be less than 10 cm, and that the wall defect should not be greater than 3 cm [11], but these statements were made more than 10 years ago. In our study, we selected a maximum defect diameter of 6cm for an ambulatory procedure due to the availability of Ventralex (Davol Bard) 8cm self-expanding mesh allowing a preperitoneal overlap of 2cm. The use of this mesh is associated with good published results with a 0% to 9% recurrence rate and a 2.2% to 3% surgical wound infection incidence [13,14]. Its composition allows visceral contact, so it can be placed intraabdominally [15].

Regarding the surgical technique performed, there is some heterogeneity in our results. The common feature in the study is the use of a prosthetic mesh in the repairs, whose superiority to primary closure with suture has been demonstrated in previous studies [16]. The position of the mesh in our study varies considerably, with preperitoneal placement being our most common technique used, a fact that is explained by the midline and periumbilical situation of the majority of the wall defects, which makes the dissection of this plane easier. Since there is currently no evidence to support the superiority of a particular technique over others [1, 17], we did not consider it necessary to carry out any subgroup analysis on this subject.

The recurrence rate obtained in our study is in accord with other studies, although follow-up periods vary. Since the introduction of prosthetic mesh techniques, the accepted recurrence rate is between 5 and 10%, which is significantly lower than that of primary closure, which is between 20 and 50% according to the published series [18]. However, the 8.13% recurrence rate observed in our series is lower than the 20.7% per year referred by the Spanish National Registry of Incisional Hernia of 2016 [19], although the inclusion of recurrent hernias in this registry should be taken into account, might explain this difference. The follow-up time performed in this study could be considered relatively short, since although most recurrences occur within the first 2 years, several studies have shown an increase in the recurrence rate with a longer follow-up period. The study by Burger et al. [20], in which hernia recurrence was observed in 32% of the patients who were reviewed for 10 years, constitutes a good a example of this issue. Finally, our reintervention rate of patients with hernia recurrence is higher than the 20-25% mentioned in the most recent reviews [21].

Only 2.8% of our patients suffered a postoperative complication. This percentage is similar to that reported by Qin et al. [4], in which a 2.1% rate was obtained with 7,666 patients. The seroma rate is much lower than that observed in other studies, in which a 30% rate of appearance is reported [22]. It is possible that the systematic use of a compressive girdle (standardised practice in our centre) from the time of operation may contribute to these good results. The frequency of prolonged postoperative pain (1 single case) was also less than the 5% reported in the existing literature [23].

Conclusion

In conclusion, the results obtained in this study indicates that the incisional hernia repair can be carried out in an ambulatory setting. Patient selection selection is important to ensure good results.

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