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Laparoscopic Inguinal Hernia Repair: New Policies

Key Words

Hernia repair, laparoscopic
Laparoscopy
Transperitoneal approach
Preperitoneal approach
Inguinal hernia

Abstract

This paper describes our most recent experience with laparoscopic inguinal hernia repair. From September 1993, our aim was to perform a more 'tailor-made' treatment depending on the local findings during laparoscopic inspection of the inguinal region. Inspection was performed by a strictly preperitoneal approach in the majority of patients and by a transperitoneal approach in patients who had had previous surgery in the retro-inguinal or prevesical space. Twenty patients had the transperitoneal approach, and 360 had the preperitoneal approach. Repair of the hernia consisted of a simple reduction of the sac without parietal reinforcement in 9 patients with a Nyhus I hernia, and in reduction of the sac plus suture narrowing of the internal inguinal ring in 1 patient with bilateral Nyhus II hernias. 370 patients were staged as Nyhus III or IV and underwent mesh placement after hernia reduction. There was one major postoperative complication in a patient treated with mesh who presented a hematoma requiring drainage after 6 weeks. Five recurrences were noted with a follow-up time of 18 months. They all occurred in patients treated preperitoneally without mesh fixation for Nyhus III or IV. The tailor-made laparoscopic approach to inguinal hernia repair performed preperitoneally, or transperitoneally in selected cases, is safe and reliable as far as can be evaluated with this short follow-up.

Introduction

Since the first description of laparoscopic inguinal hernia repair, many surgeons have adopted the concept of routine laparoscopic exploration and treatment of this condition.

In an effort to mimick an existing open procedure and to avoid the complications of transperitoneal hernia repair [1], an increasing number of laparoscopists perform

total extraperitoneal hernioplasty (TEP) [2]. Mesh placement, however, is probably not warranted in young patients in certain cases [3]. Stoppa et al. [4] themselves did not perform mesh repair for all types of hernias.

We therefore tried to develop a more patient-adapted approach in which treatment of the hernia would be performed according to the findings of preperitoneoscopic exploration, whenever possible, and with omission of mesh in selected cases.

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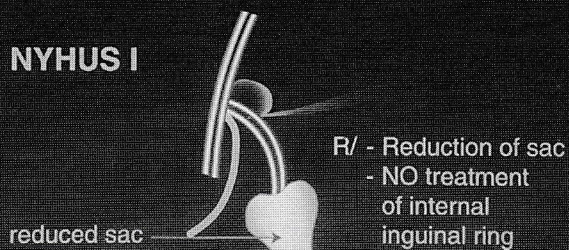
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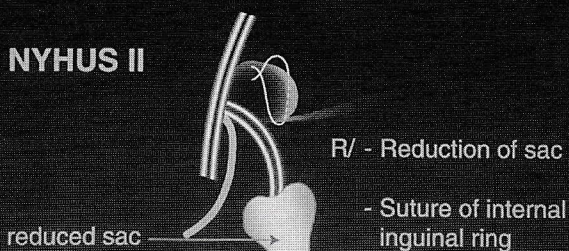
LAPAROSCOPIC HERNIA REPAIR

NYHUS I



LAPAROSCOPIC HERNIA REPAIR

NYHUS II



LAPAROSCOPIC HERNIA REPAIR

NYHUS III IV

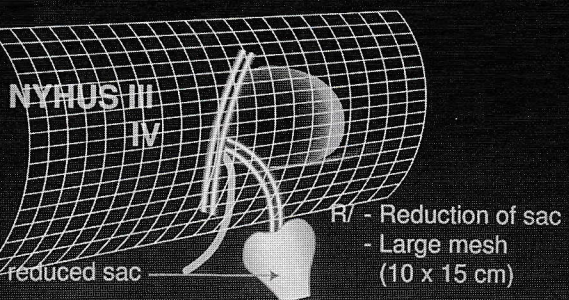


Fig. 1. Nyhus I hernia: treatment consists of simple reduction of the sac.

Fig. 2. Nyhus II hernia: treatment consists of partial suture closure of the internal inguinal ring and reduction of the sac.

Fig. 3. Nyhus III and IV hernia: treatment consists of reduction of the sac and placement of a large mesh.

Material and Methods

As of September 1993, all patients fit enough for general anesthesia and presenting with inguinal hernia were submitted to videoscopic exploration and treatment. All patients underwent preperitoneoscopic exploration except when they had a history of previous retroinguinal dissection, either laparoscopically or open. These latter patients underwent laparoscopic transperitoneal exploration.

After thorough dissection of the retroinguinal space, the type of hernia was assessed: Nyhus I if the hernia was indirect and the internal inguinal ring was not dilated; Nyhus II if the hernia was indirect and the internal inguinal ring was dilated but did not displace the epigastric vessels medially, and Nyhus III if the hernia involved the area medial to the epigastrics (A = direct hernia, B = large indirect hernia with medial displacement of the epigastrics, C = femoral hernia, D = personal modification, see Discussion, indirect hernia in patients over 35 or with associated heterolateral Nyhus III or IV). Nyhus IV hernias were the recurrent hernias [5].

Treatment was adapted to the findings in that Nyhus I hernias in patients under 35 were treated by simple reduction of the sac (fig. 1); Nyhus II hernias in patients under 35 were treated by reduction of the sac and partial closure of the internal inguinal ring by suture (fig. 2), and Nyhus III and IV hernias were treated by placement of as large a mesh of polypropylene as possible (12 x 15 cm in the preperitoneal approach, TEP, and 12 x 8 cm in the transperitoneal approach, TAPP; fig. 3).

In this series the mesh was not stapled in TEP. In TAPP, however, the mesh was stapled right before suture closure of the peritoneum.

Results

From September 1, 1993, until August 1, 1995, 380 patients representing 577 hernias were treated. The mean age was 58 years. Forty-five patients were female, and 335 were male. Twenty patients underwent the transperitoneal approach. Five patients in this latter group were female, they all had undergone previous Retzius surgery. They represented 10 hernias of Nyhus stage III. Fifteen patients were male. Five had had unilateral open posterior inguinal hernia repair. Ten had unilateral (6 patients) or bilateral (4 patients) recurrences after laparoscopic hernia repair.

Three hundred and sixty patients underwent the strictly preperitoneal approach. Forty patients were females. One female patient aged 21 had bilateral Nyhus II hernias. This latter patient was treated accordingly without mesh. The 39 other female patients represented 48 hernias (9 bilateral), all Nyhus III.

Three hundred and twenty patients were male. In this group, 178 hernias were bilateral, 142 unilateral. Nine unilateral hernias were Nyhus I in young patients and treated accordingly. Four hundred and forty-three were

Nyhus III or assimilated as such and 46 were recurrent (Nyhus IV).

There were no conversions and no perioperative complications. Hospital stay was 36 h (range 8–144).

Several patients presented postoperative seromas which subsided spontaneously. Other postoperative complications were found in 2 patients: 1 patient with a prolonged ileus after TEP, and 1 female patient with ilioinguinal neuropathy in the TAPP group. Both complications subsided spontaneously. One additional complication required reoperation: a large hematoma developed in a patient with bilateral hernia in the Nyhus III TEP group. The hematoma was treated surgically after 6 weeks. There were no infections.

All 380 patients were recalled for evaluation. Three hundred and sixty-three patients responded. Two hundred and fifty-two patients were reexamined by a member of the surgical team. One hundred and eleven patients were examined by their general practitioner. Seventeen patients, all treated for unilateral Nyhus III or IV hernias, did not show.

Five recurrences were noted in 5 patients in the TEP group: 3 after Nyhus III hernia, and 2 after Nyhus IV (recurrences per patient, 5 of 380 or 1.3%; recurrences per hernias performed, 5 of 577 or 0.8%; recurrences per patient after TEP, 5 of 360 or 1.4%; recurrences per hernias operated on according to the TEP technique, 5 of 498 or 1.0%). No recurrences were detected in the other groups. Two patients underwent laparoscopic transperitoneal revision and are part of the TAPP group in this series, whereas 1 patient declined reexploration. The two Nyhus IV group recurrences underwent open Stoppa repair. The time to appearance of a recurrence was 4 weeks (range 2 days to 2 months) in 4 patients and unknown in the 5th (diagnosed after 26 months).

Discussion

This prospective study served to demonstrate that laparoscopic hernioplasty can be adapted to the patient's anatomical condition. Placement of mesh is probably only necessary in Nyhus III and IV hernias [5]. Stoppa et al. [6] limited their giant mesh plasty to selected cases in whom the hernia defect involved more than the internal inguinal hernia ring. In our series with the necessary reserve considering the short follow-up time, we experienced no recurrences in the patients in whom mesh placement had been judged unnecessary.

Whereas the transperitoneal laparoscopic approach has been shown to enable easy classification of hernias [7], the preperitoneoscopic approach, if properly performed, is just as efficient for staging purposes and probably safer [2].

We prefer the preperitoneal approach because of the possible complications of the transperitoneal access route [1, 8, 9]. In laparoscopy, however, the transperitoneal route is, in our hands at least, the only possible posterior one in case of previous Retzius or retroinguinal surgery. It is therefore our approach of choice in recurrences after laparoscopic hernioplasty. Some might judge it preferable to place the mesh via a conventional anterior approach after previous posterior surgery. We, however, think that mesh must always be placed posteriorly for mechanical reasons [4, 5, 9].

The fact that previous dissection in Retzius' space precludes safe subsequent retroperitoneal dissection prompts us now to perform bilateral repair in unilateral Nyhus III and IV cases, especially when a balloon is used for dissection. This seems to be a logical attitude since most direct hernias might be caused by a biochemical deficiency [10]. In the same frame of mind, in patients over 35 with Nyhus I or II hernias and in bilateral cases with Nyhus I or II on one side and III or IV on the other side, we routinely perform bilateral mesh placement for the same biochemical reason. These indirect hernias were therefore staged as Nyhus III (D) in this series. Hospital stay in our series was 36 h. Only a few cases were done on an outpatient basis. This, however, has to do with the local preferences of the population and with the tendency to perform 'easy' cases towards the end of the operating schedule which delays hernia operations until the afternoon.

The study has also shown certain drawbacks to the technique. First, there was reoperation for hematoma evacuation. This occurred early in the series when we did not routinely use suction drains as we do now. Seromas and hematomas are frequent after laparoscopic hernioplasty, even though they subside spontaneously in most cases [1].

Second, there was a prolonged ileus in an uncomplicated TEP case. This was most likely caused by an unnoticed rent in the peritoneum, with subsequent small bowel adhesions. Even in TEP, it is of the utmost importance to suture any sizeable opening in the peritoneum. Sometimes, however, when the peritoneum is redundant, the opening in the peritoneum collapses spontaneously and there is no need for suturing. In case of doubt, one can perform transperitoneal inspection at the end of the procedure and perform laparoscopic suture of the defect if

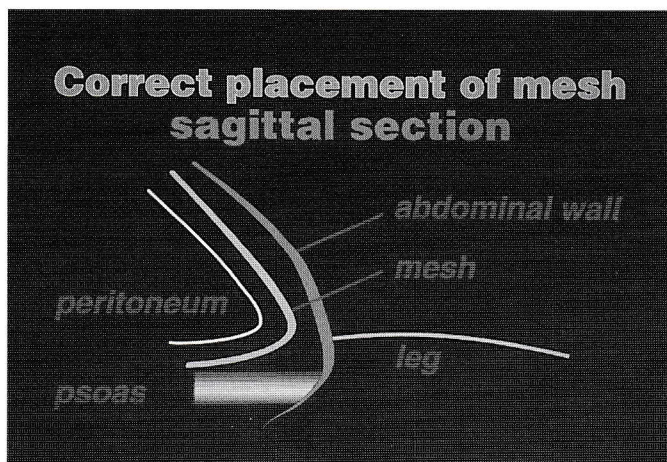


Fig. 4. Sagittal section of the body at the level of the psoas, showing correct position of the mesh which takes the configuration of an open book.

necessary. The need to hermetically close the peritoneum has been well demonstrated [11].

We did encounter a recurrence rate of 1% after TEP without stapling of the mesh. As mentioned in the Results, 2 cases were reoperated laparoscopically and the area of recurrence appeared to be located in the lower lateral quadrant of the repair with sliding of the hernia sac below the mesh. This confirms the observations of others [12] in open surgery. It is imperative to place the mesh as an 'open book' on the psoas and cord structures (fig. 4) and to watch the peritoneum roll inside the 'open book' at release of the retroperitoneum. Since the mesh was not stapled in TEP, forceps were needed to hold the mesh in place when releasing the CO₂. However, all 4 quadrants cannot be secured with 2 forceps. It is therefore logical to fix the mesh in the 2 medial and the upper lateral quadrants, away from any possible neural damage [13], and to hold on to the lower lateral quadrant when releasing the pneumoperitoneum. With the introduction of new 5-mm stapling devices (Tacker®, Origin, Menlo Park, Calif.), our reluctance to staple has decreased and staples are now routinely placed in Cooper's ligament and the two superior quadrants of the mesh.

Finally we need to discuss the number of patients that could not be traced for follow-up evaluation. According to Bassini [14] all these patients need to be considered as recurrences, which adds up to a 5.8% (22 of 380) recurrence rate (worst case scenario).

This number might still go up with longer follow-up. According to Stoppa [12], all recurrences after mesh

placement appear before 6 months. This statement, however, if probably true after laparoscopic mesh hernioplasty [7], is certainly not valid for patients treated without mesh in whom recurrences can still occur after more than 10 years [15]. Now, if all hernias treated without mesh end up as recurrences, the eventual number of recurrences would be as high as 32 (8.4%). This number, however high, is still comparable to results from open procedures performed at most centers [3, 16].

Moreover, this is a series of consecutive unselected patients, and all patients, without exception, who were able to undergo general anesthesia, were treated laparoscopically and conversions did not occur.

The study seems to show that the preperitoneoscopic approach to inguinal hernia is feasible with acceptable results in the majority of cases. Mesh can probably be omitted in Nyhus I and II patients below 35 years of age, at least if they do not show heterolateral Nyhus III or IV hernias. If used, mesh should probably be stapled in all but the lateral lower quadrant, especially in bilateral hernias, so that the surgeon can make sure that the good position of the mesh is maintained while desufflation of the preperitoneum occurs.

Patients with previous Retzius or retroinguinal surgery can be treated safely by the transperitoneal route.

Overall, 5 recurrences (1.3%) were diagnosed, but the absence of follow-up in 4.4% and the short follow-up in patients treated without mesh (2.9%) could add up to a recurrence rate of 8.4% after more than 5 years.

Therefore, this technique of hernia treatment under general anesthesia, while acceptable, does not appear to be a major improvement over conventional tension-free techniques [8, 17, 18]. Only time will tell if mesh fixation and additional experience will provide more convincing arguments in favor of the endoscopic approach.

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