Local anesthesia for open mesh repair of recurrences after previous total extraperitoneal inguinal hernia repair

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Abstract:
INTRODUCTION: Optimum treatment for recurrences after laparoscopic repair of inguinal hernia (IH) is debatable. Guidelines recommend open repair under general anesthesia (GA), whereas emerging studies show relaparoscopy as a feasible option. Both require GA and incur extra cost. Does open surgery under local anesthesia (LA) is an option for recurrent hernia following laparoscopic surgery?

METHODS: This is a retrospective review of medical reports of four patients who underwent open mesh repair under LA for recurrences after previous laparoscopic IH repair between May 2015 and August 2018.

RESULTS: All the patients were male with a mean age of 50 years and 3 months (range 36–64 years). All the patients have primarily undergone total extraperitoneal (TEP) repair. Inadequate deperitonealization at the deep ring (n = 2), mesh migration (n = 1), and missed indirect sac were the causes for recurrences. All the patients underwent tension-free Lichtenstein repair under LA. The mean operative time was 25 min (range, 18–32 min). Tissue planes were well preserved and separation of cord structures from hernia sac and preservation of ilioinguinal nerve were possible in all cases. No conversions to GA. None of the patients had long-term morbidity or recurrences during the mean follow-up period of 1 year and 7 months (range, 1 month–2 years). All the cases were performed as day-case procedures.

CONCLUSION: Open mesh repair under LA is a safe and effective option for recurrences after previous TEP repair of IH.

Keywords: Inguinal hernia, laparoscopy, local anesthesia, recurrence

Introduction

Management of recurrences after laparoscopic inguinal hernia (IH) repair is controversial. Many guidelines recommend and encourage open mesh repair under general anesthesia (GA) for this subset of patients.1-4 Emerging studies show relaparoscopy as an effective option.5-8 Additional cost for GA, prolong duration, and high risk of inadvertent injury to surrounding structures are the disadvantages of these options.5-8

As the anterior tissue planes of the inguinal region are not disturbed during laparoscopic IH repair, local anesthetic techniques should be possible in recurrences after laparoscopic IH repair.

This study describes the early experience of open mesh repair under local anesthesia (LA) for recurrence after laparoscopic IH repair.

Methods

This is a retrospective review of four patients who underwent open mesh repair for recurrences after laparoscopic IH repair during the period of May 2015–August 2018 at our institute.

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Preoperatively, all the patients assessed for GA and informed about the possibility of conversion to GA in case of difficult dissection or intolerance of LA by the patient. Informed written consent was obtained for conversion of anesthesia to GA and for surgical procedure.

In our institute, we use 2% lignocaine as the local anesthetic agent for IH repair and applied to this subset of patients too. Five milligrams of midazolam was given intravenously during the procedure. Standard tension-free Lichtenstein repair done while infiltrating local anesthetic agent under each tissue layers of anterior abdominal wall as the surgery progresses. The lower end of the heavyweight 6 cm × 11 cm-slited polypropylene mesh anchored to inguinal ligament with a polypropylene continuous suture starting from the pubic tubercle. Additional anchoring sutures placed in the upper part of the mesh and internal oblique muscle. Slit was closed lateral to the cord structures, leaving adequate space for the cord to leave the internal ring. The closure was done in layers. The American Society of Anesthesiologists (ASA) category, side of IH and recurrence, etiology for recurrence, intraoperative outcomes, long-term outcomes, and recurrences were collected.

Results

All the patients were males. All of them were in ASA Grade 1. The mean age was 50 years and 3 months. Patient demographics, hernia characteristics, and operative features are shown in Table 1.

All the primary repairs were total extraperitoneal (TEP) repairs. Recurrences were due to inadequate deperitonealization at the deep inguinal ring (n = 2), mesh migration (n = 1), and missed indirect sac (n = 1). All the TEP repairs were done using heavyweight 10 cm × 10 cm polypropylene mesh. Anchoring of mesh was not done during laparoscopic TEP in all the cases. All the recurrences were indirect hernias.

Tissue planes between all the layers down to the deep inguinal ring and around the spermatic cord were noted to be free of adhesions in all the cases [Figures 1 and 2]. Separation of hernia sac from cord structures performed without a difficulty [Figure 3]. Identification and preservation of ilioinguinal nerve were possible in all the cases [Figure 4]. Anchoring of polypropylene mesh to the inguinal ligament and internal oblique muscle was performed in the usual manner [Figure 5].

None of the patients had intraoperative events. There was no conversion of LA to GA. The mean operating time was 25 min (range 18–32 min).

All the patients were discharged within 24 h. None of the patients were given prophylactic antibiotics. Diclofenac sodium suppositories, oral diclofenac sodium, and paracetamol were the analgesics used to control pain. There were no wound infection, chronic pain, or recurrences during the mean follow-up period of 19 months (range 1–24 months).

None of the patients developed long-term morbidity or recurrence.

Discussion

In this era of laparoscopic IH repair gaining popularity recurrences after the procedure is encountered. Many guidelines including European Hernia Society and International Guidelines for Groin Hernia Management recommend open mesh repair under GA for recurrences after laparoscopic IH repair. Emerging studies show relaparoscopy as a feasible option.

| Patient number | Age (years) | Position and type of primary hernia | Etiology of recurrence | Duration of open repair under LA |
|----------------|-------------|-----------------------------------|-----------------------|---------------------------------|
| 1              | 36          | Left indirect and right direct and indirect | Mesh migration        | 25 min                          |
| 2              | 61          | Bilateral indirect                | Inadequate deperitonealization | 18 min                          |
| 3              | 64          | Bilateral direct                 | Missed indirect sac    | 32 min                          |
| 4              | 40          | Bilateral indirect               | Mesh migration        | 25 min                          |

LA: Local anesthesia
Both above treatment options for recurrences after laparoscopic IH repair require GA and incur additional cost. Redissection in the previously operated area is challenging due to the distorted anatomy and adhesions.\textsuperscript{[5,10]} For the proper placement of new mesh, the previous mesh may need to remove, which may consume significant portion of operating time. The prolonged learning curve is another disadvantage of this technique.\textsuperscript{[10]} The mean duration of relaparoscopic procedure exceeds 1 h.\textsuperscript{[2,5,8]} Inadvertent vascular injury and injury to vas deferens are documented.\textsuperscript{[5,8]} Documented complication rates with relaparoscopic approach reach up to 5.9\%.\textsuperscript{[6]}

Open mesh repair is the recommended treatment for primary unilateral hernia\textsuperscript{[1]} and surgeons are experienced with it. Open repair under LA is cost-effective and safe.\textsuperscript{[4,11,12]} Observations in the present study show that there were no adhesions in the tissue planes encountered in the open approach, which is the main pillar to success in LA technique.

The present study shows that open mesh repair under LA can be carried out within a shorter period than relaparoscopic surgery.

Conclusion

Open mesh repair under LA for recurrence after laparoscopic IH repair is safe and effective.

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Conflicts of interest

There are no conflicts of interest.

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