Microlaparoscopic approach for inguinal hernia repair in infants with repaired bladder exstrophy

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**ABSTRACT**

Open hernia repair in infants with repaired bladder exstrophy can be very difficult. Laparoscopy with its high magnification and easier access to the inner inguinal ring can be an alternative to open repair. We present our early experience on laparoscopic inguinal hernia repair in two boys with repaired bladder exstrophy. The procedures were performed microlaparoscopically which is technically identical to procedures performed during standard laparoscopy with only difference is the exclusive use of small diameter scopes. Three ports were used for the procedure. The internal inguinal ring was closed with a regular 4–0 nonabsorbable monofilamentous suture in a purse-string suture fashion in one case and N suture closure in the other case. Two boys, one year old and four months old respectively were operated with microlaparoscopically. Although postoperative follow-up in the first case operated with N suture closure, was uneventful, early recurrence occurred in last case operated with a purse-string suture fashion. The microlaparoscopic approach in these inguinal hernia operations, is feasible with its nearly scarless healing, and the advantage of evaluation of contralateral side and prevents these unnecessary explorations.

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Bladder exstrophy very often associates with inguinal hernia, especially in male patients [1–3]. Open inguinal hernia repair can be difficult in hernia developed after bladder closure. Introducing minimally invasive techniques in pediatric surgery can be an alternative in these cases. Although in terms of esthetic view, laparoscopic repair is superior to open repair we can achieved nearly scarless healing with microlaparoscopy [4–6]. This study reports the authors’ experience with the use of 2-mm instrument sets and small diameter scopes on laparoscopic inguinal hernia repair in two boys with repaired bladder exstrophy.

1. Material and methods

Under general anesthesia, the patients were placed in supine position. The procedures were performed microlaparoscopically. In principle, microlaparoscopy is technically identical to procedures performed during standard laparoscopy. The only difference is the exclusive use of small diameter scopes (>3 mm in diameter) and the exclusive use of 2 mm instruments [2,3]. A Veress needle was introduced into the abdominal cavity at the umbilicus, and CO2 pneumoperitoneum was established with an initial flow of 0.3 L/min (to ensure that placement of the Veress needle was correct); the flow was subsequently increased to 1.0 L/min. A maximum intraperitoneal pressure of 12 mm mercury was established. The Veress needle was replaced by a miniport (MiniPort, 2 mm, Autosuture, United States Surgical Corp. Norwalk, CT, USA), and a 2.4 mm 0° scope (Karl Storz GmbH, Tuttlingen, Germany) was introduced. Additionally, a 2 mm trocar as a working port was inserted into the right abdominal wall, and another was placed in the left side. A regular 4–0 nonabsorbable monofilamentous suture was inserted directly through the abdominal wall next to the internal inguinal ring using a regular open surgery needle driver. The needle was secured inside by the 2-mm laparoscopic needle driver. A second needle driver was advanced and used to align the needle. ‘N’ suture closure (Schier’s intracorporeal laparoscopic suture technique) was selected to close the internal ring in the first case. The internal inguinal ring was closed with a purge-string suture in the second case. Bilateral hernias were closed in the same manner without the need to change the trocar positions.

At the end of the procedure, the trocars were removed, the trocar sides were infiltrated with local anesthetic, and the skin was approximated with Steri-Strip™ adhesive skin closures only.
2. Results

The microlaparoscopy provided an excellent anatomical exposure in both cases. Operative time from skin to skin was 15 min for bilateral hernia and 10 min for the unilateral hernia. There were no intraoperative or postoperative complications. There was no blood loss. Both infants were discharged within 24 h after surgery.

2.1. Case 1

The seven days newborn baby with bladder exstrophy had been operated with initial primary bladder closure in a different institution. At postoperative fifth day wound dehiscence had occurred. Patient was transferred to our clinic in septic condition. The newborn was treated with debridement of necrotic tissues and antibiotic were administrated. One year later, at the second attempt, bladder was closed. But three days later a right inguinal hernia appeared which had not existed before. He was operated with 'N' suture intracorporeal laparoscopic suture technique. The contralateral side was evaluated and found closed in the operation. No sign of recurrence during a mean follow up of 24 months was observed.

2.2. Case 2

The one day newborn baby with bladder exstrophy underwent primary bladder closure. 4 months later he was admitted with symptomatic huge bilateral inguinal hernias. Because of diverse illnesses of the baby, the hernia repair was canceled at that time. At the age of six months, the patients underwent bilateral laparoscopic hernia repair with a purse-string suture fashion (Figs. 1–3). Early recurrence occurred in this case at the postoperative third month.

3. Discussion

Patients with bladder exstrophy have a very high incidence of inguinal hernia therefore children should be carefully examined for inguinal hernia before bladder closure [1]. Incidence of inguinal hernia in bladder exstrophy has been reported as high as 82% [1,2]. Although hernia repair in patients with bladder exstrophy should be done at the time of closure which is actually quite simple and straightforward, in cases who developed hernia after bladder closure...
closure such as our cases, inguinal exploration can be difficult due to defective inguinal anatomy caused by adjacent dissection.

The laparoscopic approach, with the magnified view of the surgical field, avoids injuries to the vas, vessels and evaluates the anatomy with a clear visualization [4–7]. The cord structures remain untouched, routine video documentation can be obtained for the diagnostic accuracy.

Because the incidence of bilaterality was 81.8%, bilateral groin exploration at the time of bladder closure has been recommended. Therefore at least 20% of all bilateral explorations may be unnecessary [1–3]. Laparoscopy has the advantage of evaluation of contralateral side and prevents these unnecessary explorations as one of our cases. In addition laparoscopy can also prevent any chance of metachronous hernia as closing patent processus vaginalis [6–10]. To our opinion, that is a great advantage over open repair.

In addition to all described above microlaparoscopy have the advantages of minimum access trauma, “nearly scarless” healing, the possibility of fewer adhesions and less postoperative pain. Cosmesis after microlaparoscopy is superior when compared with the open procedure or even with the use of 5-mm trocars. The scars after the exclusive use of 2-mm instruments are, for the most part, visible only to the surgeon as a small dot on the abdominal wall. [2,3]

We found that microlaparoscopic repair is a safe, and effective in hernia repair and are practical in terms of the surgeon’s experience and the facilities.

4. Conclusion

We suggest that microlaparoscopic repair may be a promising alternative to open repair as an effective way to treat inguinal hernias in childhood hernia developed after bladder extrophy repair.

References