



GIANT INGUINOSCROTAL HERNIA - A RARE CASE MANAGED AND REVIEW OF LITERATURE

Surgery

Waqar Ahmed Ansari

Grant Government Medical College and Sir JJ Group of Hospitals

Parth Bhavesh Gada

Grant Government Medical College and Sir JJ Group of Hospitals

Pooja Dilip Nagwani

Grant Government Medical College and Sir JJ Group of Hospitals

Veena Kandan Mudaliar*

Grant Government Medical College and Sir JJ Group of Hospitals*Corresponding Author

ABSTRACT

Massive inguinoscrotal hernias are rare hernias that extend below the midpoint of the inner thigh, in the standing position. We present a case of a 66-year-old patient with a very large irreducible bilateral direct inguinal hernia, without signs of obstruction or gangrenous changes. The patient was taken up for surgery under general anesthesia after optimizing the patient using preoperative incentive spirometry and nebulization. We used the laparoscopic transabdominal preperitoneal laparoscopic (TAPP) approach to reduce the hernial content which was followed by Lichtenstein's open bilateral inguinal hernioplasty. The patient was kept sedated and paralyzed on ventilatory support in intensive care for 2 days. Management of giant hernia is challenging due to various problems such as loss of domain, intraoperative cardiorespiratory complications, increase in intra-abdominal and intrathoracic pressures. Even after successful management recurrence is another complication faced when compared to other inguinoscrotal hernias. We describe laparoscopic reduction along with open bilateral inguinal hernioplasty as a viable technique in this patient followed by elective ventilation in the postoperative period. He did not require bowel resection as adequate abdominal relaxation is attained with this approach.

KEYWORDS

Oral Mucocele; Lower Lip; Alginate Impression material; Mucous extravasation cyst.

INTRODUCTION:

Giant inguinoscrotal hernias are those hernias that extend below the midpoint of the inner thigh in a standing position according to the definition (Hodgkinson & McIlrath, 1984). These cases are rarely seen nowadays and usually take years of neglect for the hernia to grow into such a massive size. This patient presented late to us as elective procedures were halted due to covid-19 restrictions. Due to its massive size, the patient experiences difficulty performing day-to-day activities (Prochotsky et al., 2017). It may pose complications such as urinary retention and leakage, UTI, intertrigo, scrotal skin maceration, incarceration of hernia, and social isolation (Brondfield & Dhaliwal, 2016; Sanford et al., 2019). In such long-standing giant hernias, very few surgeons prefer to use laparoscopy to reduce the hernial contents followed by open inguinal hernioplasty as surgical management. This patient did not require bowel resection as adequate abdominal relaxation is attained with this approach.

Case:

We present a case of a 66-year-old patient who presented with a very large irreducible bilateral direct inguinal hernia for the past three years, without signs of obstruction or gangrenous changes (figure 1). He is a known case of hypertension taking oral medications and a chronic smoker for the past 20 years. Preoperative pulmonary function test revealed obstructive small airway disease. After optimizing the patient preoperatively for 3 weeks with incentive spirometry and nebulizations, he was posted for surgery under general anesthesia. Reduction of hernia contents was done using the transabdominal preperitoneal approach, which was found to contain loops of the sigmoid colon and ileum. After reducing the contents, Lichtenstein's open bilateral inguinal hernioplasty was done to save the operative time under general anesthesia. Patient was kept sedated and paralyzed on ventilatory support in intensive care for 2 days. Daily intra-abdominal pressure measurement was done to rule out abdominal compartment syndrome. Gradually the patient was stepped down and shifted to the ward. The patient tolerated oral feeds on post-op day 4 and was discharged after suture removal (figure 2).

DISCUSSION:

Giant inguinoscrotal hernias are those hernias that extend below the midpoint of the inner thigh in a standing position according to the definition (Hodgkinson & McIlrath, 1984). These cases are rarely seen nowadays and are mostly seen in rural and tribal populations as these people approach higher centers only when it becomes difficult for them

to continue with their day-to-day activities (Karhikeyan et al., 2014). Some patients present late as they might have been previously denied surgery due to the risk of respiratory compromise leading to cardiorespiratory failure which is potentially fatal (Prochotsky et al., 2017). A study has described that some patients had approached the hospital after denying surgery previously only due to its effect on their sexual life (Akpo, 2013).

The first classification for bilateral giant inguinoscrotal hernia was published by Akpo (Akpo, 2013; Menenakos et al., 2020). Akpo has sub-classified giant inguinal hernia into 4 subtypes based on the scrotal skin, inability to micturate, the abdomen, or state of the phallus (Akpo, 2013). Grade 0: The phallus is incompletely engulfed in its detumescence state. Grade 1: The phallus is completely engulfed in its detumescence state. Grade 2: The phallus is completely engulfed in its tumescence state. Grade 3: Presence of complications e.g. skin necrosis/ulceration, urine retention, acute abdomen. Due to chronic enlargement, the natural course of the contents that descends into the scrotum includes the omentum followed by the bowel. Sometimes in rare cases, other organs like the urinary bladder (Tarchouli et al., 2015), ureters (Dikmen et al., 2017), appendix (Mongardini et al., 2015), and gastric contents (Heylen & Campioni-Norman, 2020) have been reported. The size of the hernia may pose complications such as urinary retention and leakage, UTI, intertrigo, pressure sores along the medial aspect of the scrotum, incarceration of hernia, and social isolation (Brondfield & Dhaliwal, 2016; Karhikeyan et al., 2014; Sahsamani et al., 2016). As the penis gets buried inside the scrotal skin due to its massive size, urine may dribble over the excoriated or ulcerated scrotal skin causing a secondary infection. There are chances of testicular atrophy as the spermatic cord stretches due to the massive size of the contents (Karhikeyan et al., 2014). Apart from these, daily activities such as walking, sitting, and lying down are hampered.

As there is a risk of organ perforation leading to peritonitis and sepsis, treatment of these giant inguinoscrotal hernias is necessary (Staubitz et al., 2017). Management of giant hernia is challenging due to various problems such as loss of domain, intraoperative cardiorespiratory complications, postoperative ventilatory support is generally needed, and there are high chances of wound dehiscence and scrotal hematoma (Karhikeyan et al., 2014). Multidisciplinary evaluation is recommended before the surgery like pneumatological, internal, anesthesiological, cardiological, and urological examination (Prochotsky et al., 2017). Pre-operative colonic evaluation using

barium enema along with bowel preparation is important as colonic resection may be required during surgery(Prochotsky et al., 2017). Even after successful case management recurrence is much higher in giant inguinoscrotal hernias as compared to other inguinoscrotal hernias (Prochotsky et al., 2017).

A major difficulty in the surgical management of giant inguinoscrotal hernias is due to the loss of domain. As the hernia increases in size over a long period, the abdominal cavity adapts to these changes and results in the loss of domain of intestinal contents(Karthikeyan et al., 2014). Forceful replacement of abdominal content during surgery may cause a sudden increase in the intra-abdominal pressure leading to compartment syndrome. It may also cause an increase in intraperitoneal pressure leading to reduced venous return and impaired diaphragmatic motion(Karthikeyan et al., 2014). Increased intraabdominal pressure can cause raised intrathoracic pressure due to cephalic displacement of the diaphragm leading to an increase in inspiratory rate while tidal volume and lung compliance decrease(Prochotsky et al., 2017). Two main techniques which are used to manage this increase in intra-abdominal pressure are debulking of the abdominal contents by resection and using artificial progressive pneumoperitoneum to expand the abdominal cavity pre-operatively(Karthikeyan et al., 2014). In our case, we kept the patient sedated and paralyzed in the ICU for 2-3 days postoperatively to monitor intra-abdominal pressure.

Artificially induced pneumoperitoneum is used pre-operatively by intraperitoneal injection of 100 to 500 ml air daily for a minimum of 10-15 days. This technique was introduced by Goni Moreno in 1940(Menenakos et al., 2020). It is seen that this usually causes enlargement of the hernial sac instead of the abdomen therefore not used anymore. Also, this technique is contra-indicated in patients with cardiac diseases, infections, and strangulated hernia(Karthikeyan et al., 2014). Resection of a part of the intestine or omentectomy has been used in some cases to avoid a sudden increase in intra-abdominal pressure but their success is recorded only in a small series of cases as these techniques are associated with potential morbidity and mortality(Karthikeyan et al., 2014). The anastomosis can fail or the mesh used in the repair can become infected following this procedure(Prochotsky et al., 2017). Extensive bowel resections in the form of total or hemicolectomy, splenectomy, and even small bowel resections have also been described in a few cases(Karthikeyan et al., 2014). We managed our case without the need for bowel resections.

An elective postoperative mechanical ventilation for 10 days in ICU is suggested for these patients for their recovery which was used in our case(Karthikeyan et al., 2014). Postoperative lung infections can occur due to various risk factors such as decreased tidal volume and vital capacity, inadequate gas exchange, reduced diaphragmatic movements, etc. Paralytic ileus, effects of various anesthetic medications, and pain further complicate patients' condition. Wound dehiscence and impaired wound healing may occur due to increased intra-abdominal pressure(Karthikeyan et al., 2014). Extensive lysis of dense adhesions can cause scrotal hematoma in the postoperative period. Therefore firm compression bandage, closed drainage system, and careful hemostasis are very important(Prochotsky et al., 2017). A study conducted by Savoie et al. has shown that leaving the distal hernial sac in the scrotum can prevent post-op complications caused by extensive scrotal dissection(Savoie et al., 2014). Sometimes orchiectomy is required as there is a possibility of development of orchitis due to an extended dissection of the spermatic cord(Staubitz et al., 2017).

Other techniques used in the management of giant inguinoscrotal hernia include phrenectomy to enlarge the abdominal cavity(Karthikeyan et al., 2014). Abdominal wall lengthening can be done using the rotation of scrotal skin flap or prosthetic mesh but this requires surgical expertise(Prochotsky et al., 2017; Tarchouli et al., 2015). Laparoscopic component separation technique to increase the capacity of the abdominal cavity(Hamad et al., 2013). A laparoscopic approach using TAPP has been reported by Momiyama et al. in 2016 who placed a mesh in the preperitoneal space by applying Stoppa's method(Staubitz et al., 2017). Reduction of displaced viscera using a hug technique was presented by Cavalli et al.(Cavalli et al., 2015). Menenakos et al. have reported successful management by a combined approach using preoperative progressive pneumoperitoneum (PPP) along with an intramuscular injection of botulinum toxin (BTI) followed by surgical repair of the hernia using the Stoppa procedure(Menenakos et al., 2020). The hernia sac has been used as a peritoneal flap and a prosthetic mesh was placed over it to strengthen the defect(Sahsamanis et al., 2016). A combined approach was used by Miller et al. who used PPP followed by hernia repair using the Stoppa technique along with transversus abdominis release(Miller & Reed, 2020). Ultrapro

hernia system (UHSL) in which the floor of the inguinal canal is supported by placing an underlay under the transversalis fascia and Lichtenstein repair on the anterior side of the canal(Maeda et al., 2014). Minimally invasive techniques like extended totally extraperitoneal repair (eTEP) along with PPP and BTI with successful outcomes have also been reported(Sanford et al., 2019).

CONCLUSION:

Giant inguinal or inguinoscrotal hernia is an uncommon surgical entity that is challenging for surgeons and specialists involved in the treatment. A standard surgical approach is not yet followed for this type of hernia and surgical care is individualized in most cases. We used a laparoscopic approach to reduce the contents of the hernial sac followed by Lichtenstein's open bilateral inguinal hernioplasty. We conducted the surgery successfully without using any techniques to expand the abdominal wall or the need for bowel resection. Careful preoperative evaluation and preparation of a patient together with intensive intraoperative and postoperative monitoring is the key to achieving good treatment results.



(figure 1)

(figure 2)

REFERENCES

1. Akpo, E. E. (2013). Bilateral giant inguinoscrotal Hernia: Psychosocial issues and a new classification. *African Health Sciences*, 13(1), 166–170. <https://doi.org/10.4314/ahs.v13i1.24>
2. Brondfield, S., & Dhaliwal, G. (2016). Giant Inguinoscrotal Hernia. *Journal of General Internal Medicine*, 31(12), 1537. <https://doi.org/10.1007/s11606-016-3710-6>
3. Cavalli, M., Biondi, A., Bruni, P. G., & Campanelli, G. (2015). Giant inguinal hernia: The challenging hug technique. *The Journal of Hernias and Abdominal Wall Surgery*, 19(5), 775–783. <https://doi.org/10.1007/s10029-014-1324-7>
4. Dikmen, A. V., Guneri, C., Yalcin, S., Acikgoz, O., Ak, E., & Cetiner, S. (2017). A Ureteral Inguinoscrotal Hernia from a Pelvic Kidney. *Current Urology*, 11(1), 51–53. <https://doi.org/10.1159/000447194>
5. Hamad, A., Marimuthu, K., Mothe, B., & Hanafy, M. (2013). Repair of massive inguinal hernia with loss of abdominal domain using laparoscopic component separation technique. *Journal of Surgical Case Reports*, 2013(3), rjt008. <https://doi.org/10.1093/jscr/rjt008>
6. Heylen, J., & Campioni-Norman, D. (2020). Bilateral inguinoscrotal hernia with gastric contents and subsequent perforation: Lessons in operative management. *International Journal of Surgery Case Reports*, 77, 853–856. <https://doi.org/10.1016/j.ijscr.2020.11.155>
7. Hodgkinson, D. J., & McIlrath, D. C. (1984). Scrotal reconstruction for giant inguinal hernias. *The Surgical Clinics of North America*, 64(2), 307–313. [https://doi.org/10.1016/s0039-6109\(16\)43287-1](https://doi.org/10.1016/s0039-6109(16)43287-1)
8. Karthikeyan, V. S., Sistla, S. C., Ram, D., Ali, S. M., & Rajkumar, N. (2014). Giant inguinoscrotal hernia—Report of a rare case with literature review. *International Surgery*, 99(5), 560–564. <https://doi.org/10.9738/INTSURG-D-13-00083.1>
9. Maeda, K., Kunieda, K., Kawai, M., Nagao, N., Tanaka, C., Oida, Y., Kiyama, S., & Tawada, M. (2014). Giant left-sided inguinoscrotal hernia containing the cecum and appendix (giant left-sided Amyand's hernia). *Clinical Case Reports*, 2(6), 254–257. <https://doi.org/10.1002/ccr3.104>
10. Menenakos, C., Albrecht, H. C., & Gretsches, S. (2020). Bilateral giant inguinoscrotal hernia. Presentation of a novel combined two-stage repair approach. *Journal of Surgical Case Reports*, 2020(3), rjaa012. <https://doi.org/10.1093/jscr/rjaa012>
11. Miller, D. B., & Reed, L. (2020). Successful outcome of a giant inguinoscrotal hernia: A novel two-staged repair using preoperative progressive pneumoperitoneum and transversus abdominis release. *Journal of Surgical Case Reports*, 2020(12), rjaa511. <https://doi.org/10.1093/jscr/rjaa511>
12. Mongardini, M., Maturro, A., De Anna, L., Livadioti, G., D'Orazi, V., Urciuoli, P., & Custereri, F. (2015). Appendiceal abscess in a giant left-sided inguinoscrotal hernia: A rare case of Amyand hernia. *SpringerPlus*, 4, 378. <https://doi.org/10.1186/s40064-015-1162-9>
13. Prochotsky, A., Dolak, S., Minarovjech, V., Medzo, I., Hutn, M., & Mifkovic, A. (2017). Giant inguinoscrotal hernia repair. *Bratislavské Lekárske Listy*, 118(8), 472–478. https://doi.org/10.4149/BLL_2017_091
14. Sahsamanis, G., Samaras, S., Basios, A., Katis, K., & Dimitrakopoulos, G. (2016). Treatment of a half century year old giant inguinoscrotal hernia. A case report. *International Journal of Surgery Case Reports*, 25, 51–54. <https://doi.org/10.1016/j.ijscr.2016.05.039>
15. Sanford, Z., Weltz, A. S., Singh, D., Hanley, R., Todd, D., & Belyanskyy, I. (2019). Minimally Invasive Multidisciplinary Approach to Chronic Giant Inguinoscrotal Hernias. *Surgical Innovation*, 26(4), 427–431. <https://doi.org/10.1177/1553350619828888>
16. Savoie, P.-H., Abdalla, S., Bordes, J., Laroche, J., Fournier, R., Pons, F., & Bonnet, S. (2014). Surgical repair of giant inguinoscrotal hernias in an austere environment: Leaving the distal sac limits early complications. *Hernia: The Journal of Hernias and Abdominal Wall Surgery*, 18(1), 113–118. <https://doi.org/10.1007/s10029-013-1049-z>
17. Staubitz, J. L., Gassmann, P., Kauff, D. W., & Lang, H. (2017). Surgical treatment strategies for giant inguinoscrotal hernia—A case report with review of the literature. *BMC Surgery*, 17(1), 135. <https://doi.org/10.1186/s12893-017-0331-x>
18. Tarchouli, M., Ratbi, M.-B., Bouzroum, M., Aitdir, B., Ait-Ali, A., Bounaim, A., & Sair, K. (2015). Giant inguinoscrotal hernia containing intestinal segments and urinary bladder successfully repaired by simple hernioplasty technique: A case report. *Journal of Medical Case Reports*, 9, 276. <https://doi.org/10.1186/s13256-015-0759-5>