USE OF TAILORED INTRAPERITONEAL ePTFE DUAL MESH IN PERMAGNA INGUINAL HERNIA

ATTILIO IGNAZIO LO MONTE[1,2], GIUSEPPE DAMIANO[1], VINCENZO DAVIDE PALUMBO[1,2,3], GABRIELE SPINELLI[1], SILVIA FICARELLA[1], ANTONIO BRUNO[1], STEFANIA RANDAZZO[3], GIOVANNI TOMASELLO[1,2], FILIPPO MAURIZIO ACCARDO[4], GIUSEPPE BUSCEMI[1,2]

[1]"P.Giaccone" Universitary Hospital, School of Medicine, University of Palermo, Italy, [2]Dpt of Surgical and Oncological Science, School of Medicine, University of Palermo, Italy, [3]PhD Course on Surgical Biotechnology and Regenerative Medicine in Organ Failure, University of Palermo, Italy, [4]Dpt of Statical and Mathematical Sciences "S. Vianelli", University of Palermo, Italy

[Uso di protesi sagomata Dual Mesh in ePTFE nell'ernia inguinale permagna]

ABSTRACT

Here we report a case of a giant inguinoscrotal hernia in an elderly patients treated by means of an open positioning of intraperitoneal ePTFE dual mesh. In patients with giant inguinoscrotal hernia the forceful introduction of viscera in abdominal cavity and primary wall closure is burnened from respiratory complication, abdominal compartment syndrome, and defects in wound healing thus exposing the patients to further morbidity and mortality risk. The management of these patients is difficult because of the high occurrence of morbidity factors that affect the success on intervention independently of the technique of surgical repair. The tension-free technique we adopted consented us to obtain a successful repositioning of viscera in their own natural positioning avoiding the occurrence of abdominal compartment syndrome, and subsequent respiratory complications.

Key words: Permagna inguinal hernia, tension free technique, intraperitoneal ePTFE mesh, abdominal compartment syndrome, RACS.

Received *October 05, 2012;* ***Accepted*** *October 15, 2012*

Introduction

Natural history of indirect inguinal hernia begins with the loss of internal inguinal ring sphincterial activity and subsequently assists to the progressive enlargement of inguinal canal[(1,2)] with a progressive migration of abdominal viscera into the scrotum . If not surgically treated this visceral migration can become so severe that the abdominal emptying can lead to a radical change in respiratory dynamics and central venous return. For these reasons surgical repair of giant inguinoscrotal hernias is often complicated. The physiological changes associated with the loss of domain can pose a risk for increased complications during surgery and the postoperative period[(3,4)].

In this report, we describe surgical tension free management of a giant inguinoscrotal hernia using an intraperitoneal ePTFE dual mesh to highlight the specific difficulties encountered in the treatment of these hernias.

Case report

A 76-year-old man presented with a three-decade history of a progressively enlarging bilateral inguinoscrotal hernia. Clinical examination showed a giant inguino-scrotal hernia that descended to the knee in the standing position (Figures 1A).

The penis could not be delivered from the scrotum. In the operating theater, after an umbilical pubic midline incision, the content of the scrotum

has been gently emptied within the abdominal cavity by a generous manual pushing (Figure 1B), the hernia sac was bilaterally removed and adhesiolysis, complete mobilization of the abdominal viscera, omentectomy offering the extra intra- abdominal space needed for a possible tension-free abdominal wall closure. Two big polypropylene plugs are separately positioned respectively into right and left inguinal enlarged ring.

The rings are closed by a 5-0 polypropylene transperitoneal tobacco pouch running suture anchored to the edge of polypropylene plug bilaterally. A pieces of ePTFE Dual mesh prosthesis was tailored (Figure 1C) and then intraperitoneally positioned, papering both inguinal regions and extending up to the level of the umbilicus, permitting the reinforcement of right and left abdominal wall weakness areas.

The prosthesis was anchored to the abdominal wall using trasparietal stitches and subsequently fixed by a simple transperitoneal 4-0 polypropilene crown running suture as already describe[5,6]. The midline abdominal incision was finally sutured by interrupted suture. In the postoperative period, oxygen saturation and acid-base balance was careful monitored with daily breathing exercises to re-educate the diaphragm during inspiration.

Results

The patient did not have any complication in the postoperative period, with no respiratory distress and normal bowel recanalization. In standing position, compared to the pre-operative status (Figure 1A) six days after surgery was observed a considerable scrotal volume reduction and an increase of the abdominal profile. This was caused by physiological viscera repositioning previously slipped into the scrotum with the reappearance of the penis silhouette (Figure 1 D). The patient was discharged ten days after surgery with a good functional and aesthetic result.

Discussion

Giant inguinoscrotal hernias are defined as those that extend below the midpoint of the inner thigh in the standing position. Giant hernias dramatically impair the patient's quality of life. The affected patient's mobility is very restricted, and they often suffer from voiding difficulties as the scrotum tightens around the penis. The ipsilateral spermatic cord becomes greatly stretched and the testicles are often atrophic or even necrotic. These specific problems have considerable psychological impact, often leading to social isolation. These patients have serious comorbid conditions that have an impact on both initial surgical decision-making and post-operative morbidity and mortality[3].

Giant inguinoscrotal hernia repair implies reintroduction of the herniated bowel into an abdominal cavity accustomed to being empty. Forced reduction of hernial contents into this contracted peritoneal cavity may alter intra-abdominal and intrathoracic pressures (i.e. abdominal compartment syndrome)[8,9], potentially hastening severe respiratory or cardiac failure and leading to higher morbidity and mortality rates[4]. Several techniques have been reported to overcome these problems. Pre-operative pneumoperitoneum has been highly recommended in the past. It is still applied, though to a lesser degree, and its use declined with the introduction of prosthetic materials and a more aggressive approach to the content[7].

Creating space for the hernia is another choice. A tension-free repair of the anterior abdominal wall is possible with the use of mesh or musculo cutaneous flaps. When soft tissue coverage is also inadequate, regional or distant flaps may be necessary, either alone or in combination with

mesh[10]. The surgical approach varies with different extension midline laparotomies, including lower abdomen inguinal incisions, their complex inguino-abdominal variants to preperitoneal techniques. Debulking procedure has reportedly facilitated the operation; the method includes resection of the herniating organs, usually the colon, small intestine, or greater omentum, at the price of an increased risk of complications such as anastomotic leak or prosthetic infection[11]. Close post-operative monitoring and ventilation are essential in the management of these patients.

With this technique it is possible to bring all the viscera into the abdominal cavity without needed of resected portions of intestine to save space. Respiratory distress or compartment syndrome can be deleted by a tailored intraperitoneal prosthesis that allows a tension free abdominal wall closure.

References

1) Amato G, Sciacchitano T, Bell SG, Romano G, Cocchiara G, Lo Monte AI, Romano M, *Sphincter-like motion following mechanical dilation of the internal inguinal ring during indirect inguinal hernia procedure*. Hernia. 2009 Feb13(1): *67-72*. Epub 2008 Oct 21.
2) Amato G, Marasa L, Sciacchitano T, Bell SG, Romano G, Gioviale MC, Lo Monte AI, Romano M. *Histological findings of the internal inguinal ring in patients having indirect inguinal hernia*. Hernia. 2009 Jun;13(3): *259-62*. Epub 2009 Feb 21.
3) Vasiliadis K, Knaebel HP, Djakovic N, Nyarangi-Dix J, *Schmidt J, Büchler M. Challenging surgical management of a giant inguinoscrotal hernia*: report of a case. Surg Today 2010; 40: *684-7*.
4) Patsas A, Tsiaousis P, Papaziogas B, Koutelidakis I, Goula C, Atmatzidis K. *Repair of a giant inguinoscrotal hernia*. Hernia 2010; 14: *305-7*.
5) Lo Monte, A.I., Damiano, G., Palumbo, V.D., Zumbino, C., Spinelli, G., Sammartano, A., Bellavia, M., Buscemi, G. *Eight-point compass rose underlay technique in 72 consecutive elderly patients with large incisional hernia*. 2011 International Journal of Gerontology 5 (3): *161-165*
6) Lo Monte AI, Damiano G, Maione C, Gioviale MC, Lombardo C, Buscemi G, Romano M, *Use of intraperitoneal ePTFE Gore dual-mesh plus in a giant incisional hernia after kidney transplantation: a case report*. Transplant Proc. 2009 May; 41(4): *1398-401*.
7) El Saadi AS, Al Wadan AH, Hamerna S. *Approach to a giant inguinoscrotal hernia*. Hernia 2005; 9: *277-9*.
8) Hołody-Zaręba J, Kinalski P, Bachórzewski R, Kinalski M, *Frequently missed abdominal compartment syndrome*. Pol Przegl Chir. 2012 Aug 1; 84(8): *426-8*.
9) Maione C, Gambino G, Di Bona A, Luna E, Turco D, Scio A, Damiano G, Virzì C, Gioviale MC, Buscemi G, Romano M, Lo Monte AI. *PTFE mesh in renal allograft compartment syndrome*. Transplant Proc. 2006 May; 38(4): *1049-50*.
10) Monestiroli UM, Bondurri A, Gandini F, Lenna G, Vellini S, Danelli P. *Giant inguinoscrotal hernia*. Tech Coloproctol 2007; 11: *283-4*.
11) Kovachev LS, Paul AP, Chowdhary P, Choudhary P, Filipov ET. *Regarding extremely large inguinal hernias with a contribution of two cases*. Hernia 2010; 14: *193-7*.

Request reprints from:
Prof. ATTILIO IGNAZIO LO MONTE
Dpt of Surgical and Oncological Disciplines (DI.CHIR.ON)
School of Medicine - School of Biotecnology
University of Palermo
Via del Vespro, 129
90127 Palermo
(Italy)