Chapter

The Tension-Free Repairs without Mesh: Desarda and Modified Bassini Techniques

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Abstract

Hernia repair has three principal objectives: suppress the hernia, prevent recidivism, and reduce postoperative pain. Many techniques have been developed especially the tension-free repair. The Lichtenstein technique is the gold standard, using a mesh. However, sub-Saharan population is known to be hard laborers leading to the high-risk factor of acquiring hernia by a parietal defect. Most of them need a heterologous hernioplasty but have limited resources. The challenge in these countries is respecting the principal objectives of a hernia repair with inexpensive prosthetic material or without it. During these previous years, two principal techniques have been developed and used with satisfied results: Desarda and Modified Bassini techniques.

Keywords: inguinal hernia, Desarda, modified Bassini, Lichtenstein, tension-free repair

1. Introduction

Inguinal hernia is one of the common surgical pathologies. A better understanding of the anatomy of the inguinal canal improved the surgical techniques and the outcomes for the patients. Developed countries are well organized in scientific societies enhancing these improvements. Instead, the sub-Saharan countries do not have specialized centers which will help by improving the hernia surgery [1] and the general surgeon's training. The problematic of hernia surgery here is double, the improvement of inexpensive safe techniques and training of the general surgeons. This chapter emphasizes on two tension-free repair techniques, Desarda and modified Bassini, which are currently used for their low cost and are easily learned by the surgeons [2].

2. Modified Bassini repair

Bassini developed his hernia repair in 1887, which was minutely described by his student Catterina in 1930. This technique is the one currently used by general surgeon in secondary and tertiary hospitals in sub-Saharan countries. A modified Bassini was introduced, described as an autologous patch. The intervention can be under general or locoregional anesthesia. The description below is a modified Bassini technique by Atah [3].

2.1 Technique

2.1.1 Skin incision

A semi-Pfannenstiel incision is done homolateral to the hernia, for an esthetic scar. The inguinal canal opening is performed parallel to the inguinal ligament and the conjoint tendon through the superficial fascia and deep fascia; the external oblique aponeurosis (EOA) is cut. The EOA cut is extended to the superficial inguinal ring. The spermatic cord is opened layer by layer, and the hernia sac is exposed, dissected, and resected.

2.1.2 Parietal repair

Through the inguinal canal, the internal oblique tendon and the transverse tendon are united to form the joint tendon or separated. Those muscle fibers are parallel to the external oblique muscle, which is behind them. The conjoint tendon or the internal oblique tendon is easily used to strengthen the inguinal canal.

The herniorrhaphy is made with the inguinal ligament left in its normal position without being dissected and sutured to the conjoint tendon with number 1 or 0 Polyglactin 910 rounded overlock suture. The suture begins at the pubic tubercle to the deep inguinal ring. The free leaf of the conjoint tendon is sutured to the inferior part of the inguinal ligament, behind the spermatic cordon following the retrofunicular Bassini technique.

The diameter of the deep inguinal ring is reduced with a separate point, to admit only the tip of the little finger, enough caring not to strangulate the spermatic cordon in male or the round ligament in female. If the repair is under tension, a discharge incision is done, and the two borders are sutured to the EOA with number 1 or 0 Polyglactin 910 interrupted sutures. The skin closure is done.

3. Desarda repair

The Desarda hernia repair, eponym name to its author, described in 2001, is an autologous hernioplasty. The technique was developed as a tension-free hernia repair without mesh, to reduce the chronic groin pain, recovery time, and cost [4]. The intervention can be performed under general anesthesia or locoregional anesthesia.

3.1 Technique

3.1.1 Skin incision

The skin incision is a 6 cm oblique at the level of the inferior abdominal line or the Malgaigne's line (**Figure 1**). The fascia is incised and the EOA exposed. The EOA is cut in line with the inguinal ligament and the upper crux of the superficial ring, with a medial leaf and lateral leaf (**Figure 2**).

3.1.2 Hernia sac dissection

A direct or indirect hernia, with or without a sac, can be found. The cremaster muscle is resected, and the hernia sac dissected in the direction of the deep inguinal ring protecting the spermatic cord (**Figure 3**). The sac is ligatured with a resorbable thread USP 2/0 and excised in an indirect hernia and inverted in a direct hernia.

Figure 1.
Skin incision.

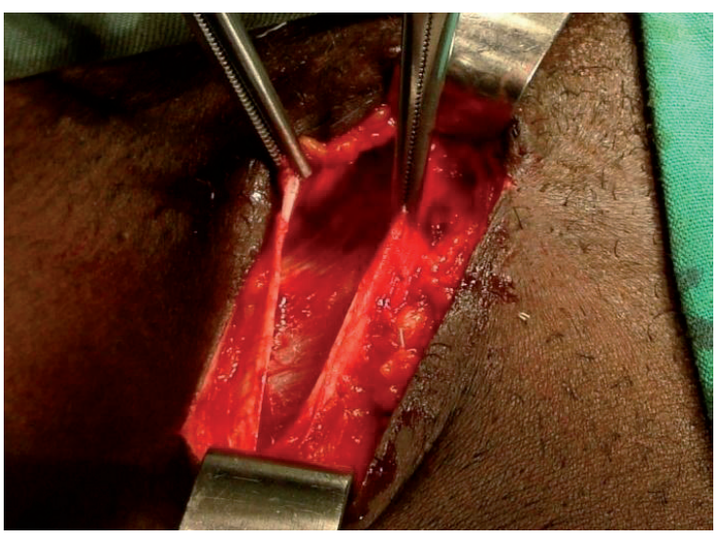

Figure 2.
External oblique aponeurosis incision.

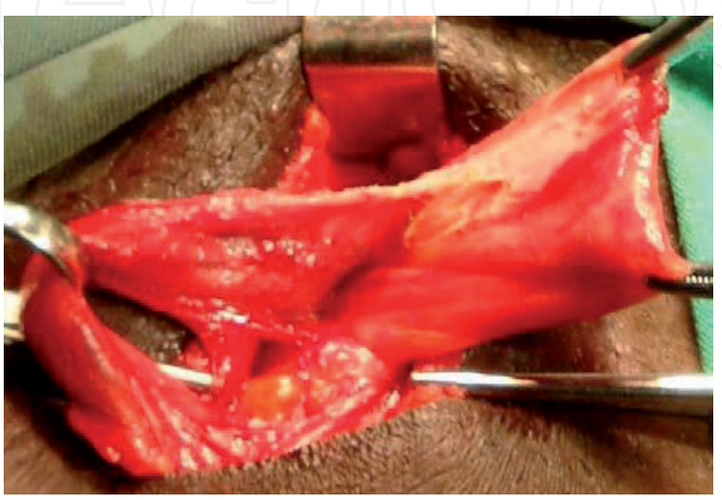

Figure 3.
Hernia sac dissection.

3.1.3 Parietal repair

The fascial plasty starts with the medial leaf of the EOA which is sutured with the inguinal ligament from the pubic tubercle to the abdominal ring using number 2/0 or 0 Monofilament Polydioxanone continuous sutures (**Figure 4**). The first two sutures were taken through the anterior rectus sheath, and the last suture is taken to narrow the abdominal ring sufficiently, caring not to strangulate the spermatic cord.

An incision is made on the sutured medial leaf to obtain an aponeurosis flap of 1–2 cm (**Figure 5**). This fascial flap is extended medially up to the pubic symphysis and 2 cm beyond the abdominal ring laterally.

The upper free border of the aponeurosis flap is sutured to the internal oblique muscle at the level of the conjoint tendon with a number 2/0 or 0 Monofilament Polydioxanone continuous suture (**Figure 6**). With these sutures of the EOA, a new posterior wall of the inguinal canal is formed behind the spermatic cord. After the suture of the EOA, the patient is asked to cough or strain if it is under locoregional anesthesia, and under general anesthesia the anesthetist is asked to give a deep breath to the patient; this is to verify the solidity of the new posterior wall.

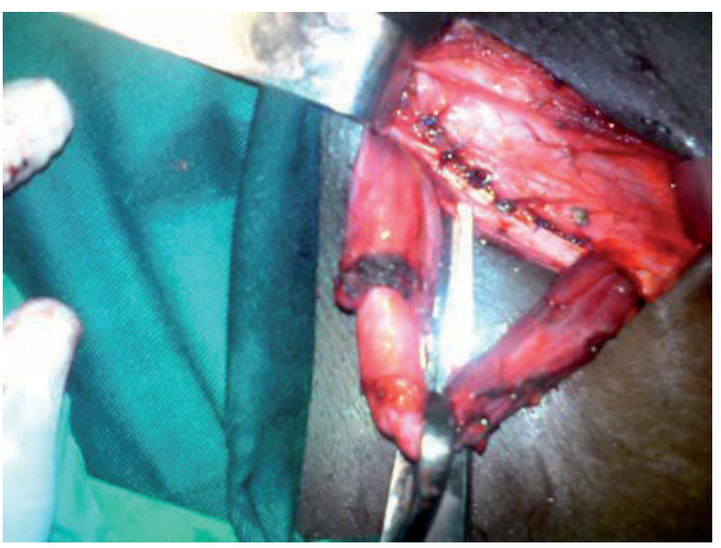

Figure 4.
Suture of the medial leaf of the EOA to the inguinal ligament.

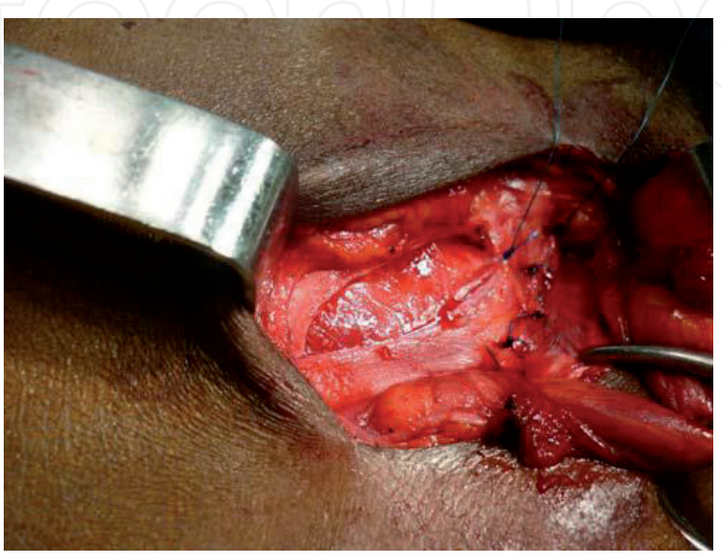

Figure 5.
Incision of the sutured medial leaf of the EOA.

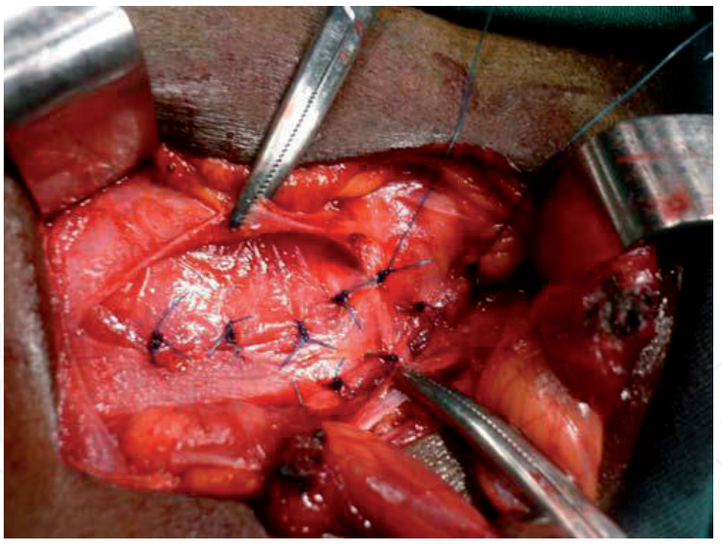

Figure 6.
Suture of the upper free border of the aponeurosis flap.

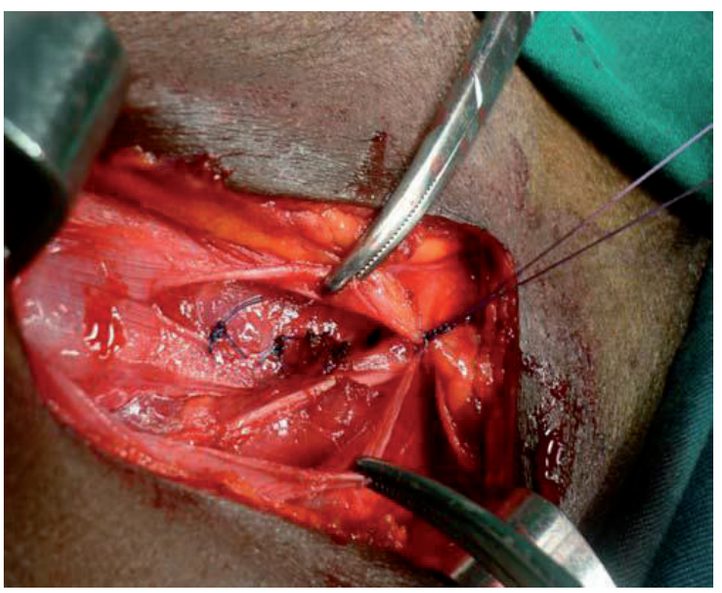

Figure 7.
Suture of the lateral leaf of the EOA to the new medial leaf of the EOA.

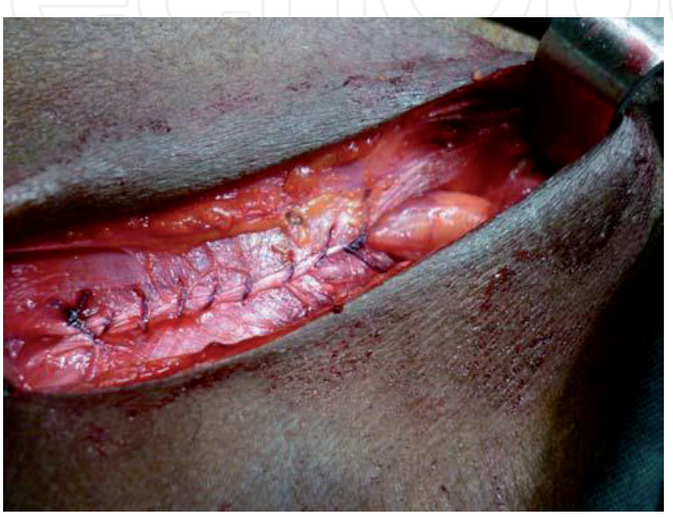

Figure 8.
Closure of the EOA.

The spermatic cord is replaced in the inguinal canal; the lateral leaf of the EOA is sutured to the new medial leaf of the EOA with a number 2/0 Monofilament Polydioxanone continuous sutures (**Figure 7**).

The EOA is sutured forward the spermatic cord (**Figure 8**), and a classic closure of the superficial fascia and the skin is done.

4. Results

The recurrence rate after an inguinal hernia repair is difficult to determine because of the high percentage of loss to follow-up. But some studies have shown that the modified Bassini technique is the most commonly used or the inguinal hernia repair [5]. This could be explained by the fact that surgeons in most of the peripheral hospitals are using tissue repair, mainly due to the limited resources of the population [6].

However, some complications occur with the tissue repair. Complications encountered in patient follow-up after a modified Bassini hernia repair are multiple; a prospective study in a rural hospital including 300 male patients highlighted some of them (**Table 1**).

The same complications can be observed with the Desarda technique as shown in a prospective study of 2 years, with 100 patients (**Table 2**) [7].

The two techniques are cost inexpensive, with a low rate of recurrence of the hernia and postoperative pain.

The European Hernia Society (EHS) gold standard regarding open tension-free hernia repair is the Lichtenstein mesh repair. However complications associated

Complications	Incidence (%)
Urine retention	5 (2.07)
Hematoma (superficial)	1 (0.41)
Wound infection	1 (0.41)
Seroma	2 (0.83)
Postoperative neuralgia	3 (1.24)
Scrotal edema	2 (0.83)
Ischemic orchitis	0 (0.00)
Recurrence	2 (0.83)

Table 1.
Complications encountered with modified Bassini technique [6].

Complications	Incidence (%)
Urine retention	3 (0.03)
Wound infection	4 (0.04)
Vomiting	2 (0.02)
Acute postoperative pain	32 (0.32)
Chronic postoperative pain after 3 months	4 (0.01)
Scrotal edema	2 (0.02)
Recurrence from 3 to 27 months	0 (0.00)

Table 2.
Complications encountered with Desarda technique.

with it includes an important rate of mesh-related infection as wound infection due in some cases to an allergic reaction, mesh migration, and nerve entrapment [8]. These complications can lead to a prolonged hospital stay and a long treatment with antibiotics. Using Desarda or modified Bassini techniques avoid the risk of mesh-related complications, which would be an extra cost for the patient.

Inguinal hernia treatment depends also on the surgeon training and experiences. There are several tension-free techniques describe with or without mesh. Another goal in the management of hernias is the training of surgeons, depending on the medical and socioeconomic context.

5. Conclusion

Inguinal hernia is one of the commonest surgical pathology. In sub-Saharan Africa, it should be considered as a public health disease, to improve its management. The socioeconomic context is important here to consider the choice of the hernia repair technique. The tension-free repairs without mesh, Desarda and modified Bassini, response well to the economic criteria, with the advantages of a low rate of recurrence, postoperative pain, and reduced hospital stay.

Conflict of interest

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this manuscript.

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References

[1] Ohene-Yeboah M, Abantanga FA. Inguinal hernia disease in Africa: A common but neglected surgical condition. West African Journal of Medicine. 2011;**30**(2):77-83

[2] Kingsnorth AN, Clarke MG, Shillcutt SD. Public Health and Policy Issues of Hernia Surgery in Africa. World Journal of Surgery. 2009;**33**(6):1188. DOI: 10.1007/s00268-009-9964-y

[3] Mgba JA, Tangnyin CP, Atah TN, Meva'a JB, Sosso MA. Cure des Hernies Inguinales en Tension -Free (Nouvelle technique en Bassini modifiée). Health Sciences and Diseases. 2016;**17**(4):83-87

[4] Desarda MP. No-mesh inguinal hernia repair with continuous absorbable sutures: A dream or reality? (A study of 229 patients). Saudi Journal of Gastroenterology: Official Journal of the Saudi Gastroenterology Association. 2008;**14**(3):122-127

[5] Konate I. Primary unilateral uncomplicated inguinal hernia repair, which is the procedure most frequently, performed in operating theatres the world over? Situation of Africa. Hernia. Jun 2019;**23**(3):623-624. DOI: 10.1007/s10029-019-01937-5. [Epub 9 May 2019]

[6] Gorad K, Lohar H, Patil S, Tonape T, Gautam R. Modified Bassini's repair: Our experience in a rural hospital setup. Medical Journal of Dr. DY Patil University. 2013;**6**:378. DOI: 10.4103/0975-2870.118276

[7] Dieng M, Cissé M, Seck M, Diallo F, Touré A, Konaté I, et al. Cure des hernies inguinales simples de l'adulte par plastie avec l'aponévrose du grand oblique: Technique de Desarda. e-mémoires de l'Académie Nationale de Chirurgie. 2012;**11**(2):069-074

[8] Zulu HG, Mewa Kinoo S, Singh B. Comparison of Lichtenstein inguinal hernia repair with the tension-free Desarda technique: a clinical audit and review of the literature. Tropical Doctor. 2016;**46**(3):125-129