

Use of the Desarda Technique in Emergency Settings: a Comprehensive Review

Danilo COCO^a, Silvana LEANZA^b, Giuseppe Angelo REINA^c

^aDepartment of General Surgery, Ospedali Riuniti Marche Nord, Pesaro, Italy

^bDepartment of General Surgery, Carlo Urbani Hospital, Jesi, Ancona, Italy

^cS. Salvatore Hospital, Paterno', S. M. Addolorata Hospital, Biancavilla, Italy

ABSTRACT

One of the most frequent surgeries performed across the world is an inguinal hernia repair, with at least twenty million people undergoing this procedure each year. The prevalence of groin hernia, defined as projections of adipose tissue or viscera through the femoral or inguinal canal, is 3–6% for women and 27–43% for men. Obstruction of the small bowel is one of the most frequent reasons for a strangulated hernia. The risk of strangulation per annum for a groin hernia is approximately 1–3%. The surgical method used to treat an emergency inguinal hernia surgery remains controversial. The elevated risk of complications and infections using prosthetic as opposed to pure tissue repair accounts for an increased likelihood of contamination of the surgical site and necrosis. To ascertain the utility of the Desarda technique in emergency hernia surgery, a systematic review in conjunction with a meta-analysis was performed, with a particular focus on duration of hospital stay, estimated operating time, relapse rate, and postoperative complications.

Keywords: Desarda technique, strangulated inguinal hernia, incarcerated inguinal hernia.

INTRODUCTION

I nguinal hernia is an extremely common surgical problem, affecting approximately 7% of the global population. General surgeons in the US correct between 600,000 to 800,000 hernias every year. The problem arises when tissues, for instance, a section of the intestine, projects through a weak point in the muscles of the abdomen. This can cause an immense amount of pain when bending, lifting heavy items, and coughing. It can also result in a

number of medical complications. For instance, pressure can be exerted on neighboring tissues, which can worsen over time as the inguinal hernia expands. This can result in considerable pain and swelling if it extends into the male scrotum. A second complication is that the hernia can become incarcerated, which means that it becomes trapped and blocks the bowel. This can cause extreme pain, vomiting, and nausea, and prevent the individual from passing gas or feces. A particularly serious complication is strangulation, which occurs when an incarcerated hernia ob-

Address for correspondence:

Danilo Coco, MD

Department of General Surgery, Ospedali Riuniti Marche Nord, Pesaro, Italy

Email: webcostruction@msn.com

Article received on the 11th of January 2022 and accepted for publication on the 19th of May 2022

structs blood flow to sections of the intestine, causing the tissue to die. This requires urgent surgical intervention as it poses a threat to life (1). It is also one of the most frequent reasons for obstruction of the small bowel, with an annual prevalence of 1–3% (2, 3). Such patients present a wide range of symptoms, including a painful lump in the groin and severe sepsis when there is ischemic perforation of the bowel. The standard response in such cases is to perform open surgery. If it is not possible to save the affected bowel or organ, a bowel resection is carried out through a separate laparotomy wound or via the groin wound. Following the first publication on the use of laparoscopy by Watson *et al*, several authors in 1993 assessed whether this technique could be utilized for emergency incarcerated and strangulated groin hernias (4). The use of laparoscopy in the elective repair of inguinal hernias has now been widely reported and endorsed. However, there is an elevated risk of iatrogenic injuries due to the technical challenges involved in reducing the hernia sac and its contents. Consequently, if surgeons identify an ischemic bowel, they often prefer to carry out a classical inguinal hernia repair as well as laparotomy. Normally, the standard method in inguinal hernia surgery is to use Lichtenstein and laparoscopic repair. However, these techniques have certain disadvantages and are not recommended in emergencies due to the elevated risk of mesh infection (5). In 2001, Dr. Mohan Desarda, from the Poona hospital and research center in India, developed a novel, non-mesh procedure (6). This involves using a flap of external oblique aponeurosis which, in addition to not requiring a mesh, has the advantages of a less extensive dissection and low cost. Controversy remains, nevertheless, regarding the surgical technique employed for emergency inguinal hernia surgery. This is primarily due to the elevated risk of complications and infections associated with prosthetic tissue repair, such as necrosis and contamination of the surgical site. In such cases, a vital role in managing an incarcerated or strangulated inguinal hernia is played by no-mesh inguinal hernia repairs. However, as yet there is no consensus as to which technique is optimal. The Desarda technique has therefore been proposed as an appropriate means of treating an emergency hernia (7). The aim of this review was therefore performed to assess the utility of the Desarda

technique in emergency setting, in particular the non-use of mesh in contaminated intraoperative field. We defined the major criteria for this surgical technique such as the no-mesh technique in inguinal hernia repair associated to intestinal resection to define duration of hospital stay, estimated operating time, postoperative complications, relapse rate, and return to work comparing to mesh techniques. □

MATERIALS AND METHODS

A systematic search for the literature published between January 2000 and 2021 was performed using PubMed database. The following search terms were used: “strangulated inguinal hernia”, “incarcerated inguinal hernia”, “Desarda technique”. The keywords for the search were used individually.

Search strategy

To perform this search for articles, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed. The focus was on emergency cases of an inguinal hernia (incarcerated, strangulated, obstructed) that required surgical intervention.

Study selection

Studies were selected according to the following inclusion and exclusion criteria:

Inclusion criteria: 1) retrospective or prospective studies on the use of the Desarda technique to treat a strangulated or incarcerated inguinal hernia in emergency settings; 2) studies which used the length of hospital stay, operating time, postoperative complications, and relapse rate as outcomes; 3) articles written in English; 4) all emergency cases involving an inguinal hernia (obstructed, incarcerated, strangulated).

Exclusion criteria: case reports, abstracts, low-quality studies, non-comparative studies and studies containing intraoperative data that could not be extracted, letters, conference abstracts, articles not written in English, and duplicated studies.

Outcomes of interest: data extraction

Where available, the following information was extracted: number of patients, type of study, length of hospital stay, operating time, postoperative complications, and relapse rate.

TABLE 1. Relevant outcomes of selected articles following the PubMed database search

Author	Type of article	Recurrence rate	Complications	Surgical site infection (SSI)	Operative time	Return to work	No. of patients
Hussain <i>et al</i> , 2017 (19)	Randomized controlled trial	7.4%	Mild to moderate 80%	19.4%	55.53±6.81 min	NR	93
Pachauri <i>et al</i> , 2019 (20)	Retrospective	3,0%	Seroma (3%) Mild pain in the 30 th postoperative day: 90%	6%	55±5 min	15 (14-28) days	30
Ansari <i>et al</i> , 2019 (15)	Randomised controlled study	0,00%	36.4% Seroma: 18.2% Experienced chronic inguinodynia: 7.31%	18.2%	102.73±24.22	9.45±2.42 days	102
Sagar <i>et al</i> , 2020 (16)	Observational study	0,00%	Seroma: 5.0%	10.0%	78.4±9.64 min	NR	20

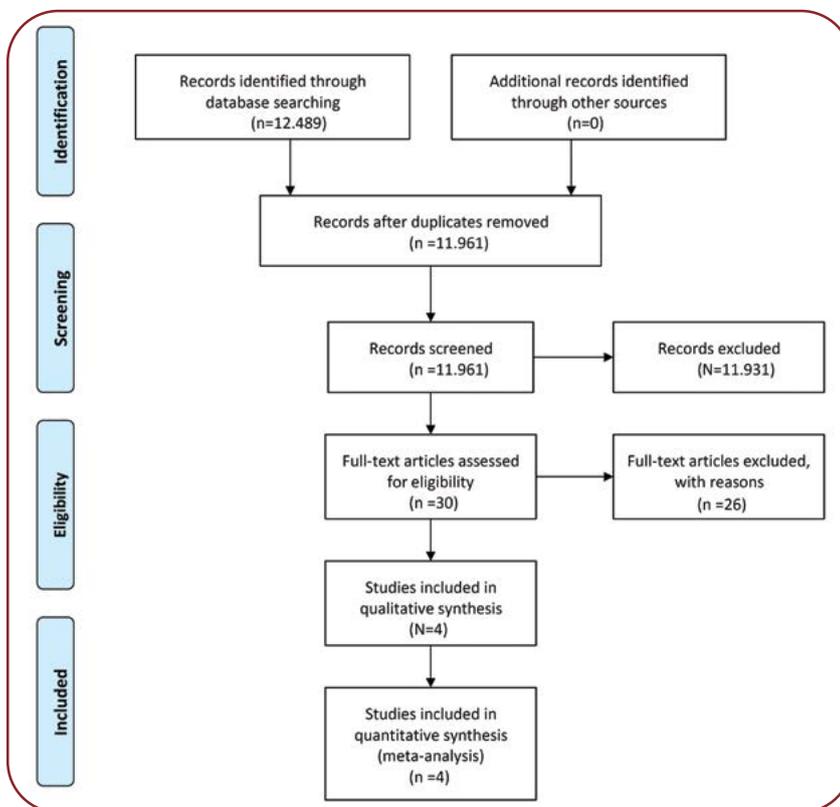


FIGURE 1. PRISMA Desarda technique. From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7):e1000097. doi:10.1371/journal.pmed1000097.

Study characteristics

A flow diagram of PRISMA guidelines is presented in Figure 1. Overall, 12,849 studies were identified following a search of the PubMed database for articles on open strangulated inguinal hernia repair, open inguinal hernia repair, open incarcerated inguinal hernia repair, laparoscopic incarcerated inguinal hernia repair, and laparoscopic strangulated inguinal hernia repair. After excluding duplicate studies, a total of 11,961 studies remained, but only 30 of them met our inclusion criteria, and of these, only 15 discussed the Desarda technique. Eleven of these studies were excluded as only four presented the outcomes following the usage of this technique in emergency settings.

Recurrence rate

The pooled prevalence of recurrence was 0%-3% (95% CI: 0.61–5.14) (8-20).

Complications

The prevalence of chronic pain was 4.35 (95% CI: 1.04–11.47). The prevalence of hematoma/seroma was 3%-18% (95% CI: 6.90–20.108) (8-20).

Surgical site infection (SSI)

The pooled prevalence of surgical site infection was 6%-18% (95% CI: 11.74–22.39) (8-20).

Operative time

The mean operative time ranged from 55 to 102 minutes (8-20).

Return to work

The pooled prevalence of return to work (RW) was between 2–17 days (8-20). In 2017, Hussain *et al* performed a randomized controlled trial on 93 patients and reported a recurrence rate (RR) of 7.4%, only mild to moderate complications in 80% of subjects, surgical site infection (SSI) in 19.4% of participants, and an operative time (OT) of 55.53 ± 6.81 minutes. Return to work was not revealed (19). In 2019, Pachauri *et al* proposed a retrospective study on 30 patients and found a 3.0% RR, 3% seroma, 90% mild pain in the 30th postoperative day, 6% SSI, OT of 55 ± 5 minutes, 15 (14-28) days to RW (20). In 2019, Ansari *et al* (15) performed a randomised controlled study on 102 patients and reported a RR of 0%; 36.4% of subjects had complications

such as seroma (18.2%) and 7.31% of participants experienced chronic inguinodynia; SSI was 18.2%, OT 102.73 ± 24.22 , and RW 9.45 ± 2.42 days. In 2020, an observational study on 20 patients, conducted by Sagari *et al*, found a RR of 0%, seroma in 5% of subjects, SSI in 10% of patients, and an OT of 78.4 ± 9.64 minutes; RW was not revealed (16). □

DISCUSSION

Conducted on at least 20 million people *per annum*, inguinal hernia repair is among the most frequent surgeries conducted worldwide. The prevalence of groin hernia, defined as adipose tissue or viscera projecting through the femoral or inguinal canal, across the human lifespan is 3–6% for women and 27–43% for men. Inguinal hernias are typically accompanied by symptoms and can only be rectified through surgical interventions. However, some patients do not experience any symptoms, although surgery is still required in approximately 70% of this cohort within the following five years. In most cases, surgery is successful. Following an inguinal hernia repair, the rate of recurrence is 11% (1). Lichtenstein's technique is generally considered the gold standard. The WSES guidelines suggest that the net can be used to Inguinal hernia incarcerated considering the surgical site is like clean-contaminated (7). In surgical fields which have a high risk of contamination, the use of a mesh in emergency scenarios has been challenged due to an elevated risk of infection and chronic pain (8). Numerous systematic reviews and randomized controlled studies have therefore been undertaken to compare Lichtenstein tension free mesh repair with the use of Desarda no mesh repair. These have reported that the latter technique offered some notable advantages. For instance, when applied to strangulated hernias, the Desarda technique yields complication and recurrence rates that are similar to or less than Lichtenstein's repair. There are also no mesh-associated complications, the hospital stay and OT are shorter, there is less postoperative pain, and the overall cost is lower (9, 10). Thus, for emergency inguinal hernia surgery, the use of homologous fabrics associated with the Desarda technique appears to be extremely beneficial for surgeons. Moreover, it does not involve the use of meshes

and is a repair without tension (9). Three recent meta-analyses identified no differences between Desarda and Lichtenstein techniques in the treatment of an uncomplicated inguinal hernia (11-13). The recurrence rate was 2.10% (95% CI: 0.61–5.14) (17, 18), the rate of chronic pain 4.35% (95% CI: 1.04–11.47) (15, 16), and the pooled prevalence of infection of the surgical site 16.56% (95% CI: 11.74–22.39) (14). These positive and encouraging results suggest the Desarda technique has an immense value and should be widely employed. However, it is not suitable for all incarcerated or strangulated hernias; in particular, it should not be applied for complex hernias, associated femoral hernias, or thin or weak or external oblique aponeurosis (19, 20).

Study strengths and limitations

There are several limitations with this study that need to be highlighted. Firstly, no comparison was made with the Lichtenstein technique in emergency settings. Secondly, the follow-up needed to be longer. Thirdly, there was no homogenous assessment of chronic pain. Finally, only four studies were included in this review;

more studies need to be conducted in emergency settings. □

CONCLUSION

The findings of the present review indicate that the Desarda technique is an extremely valuable and effective method which should be employed in emergency settings. Although the use of the Desarda technique in elective or emergency inguinal hernia repair appears to involve longer operating times than methods using mesh, it is a technique that requires a short learning curve and is readily reproducible. However, given the above identified limitations, additional randomized controlled trials with a longer follow-up and a sufficient number of patients are required to verify the findings. □

Conflicts of interest: none declared.

Financial support: none declared.

Authors' contribution: Danilo Coco and Silvana Leanza carried out the study, collected and analyzed all data, and drafted, edited and then reviewed the manuscript.

Registration of research studies: The authors have registered the study, and Danilo Coco is the guarantor.

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