



Comparative Study of Suture Versus Stapler in Open Inguinal Hernia repair:

Authors:

1. Dr Honeypalsinh H Maharaul (Professor)
2. Dr Tummuluri Venkata Vighneshwara Reddy (Resident)
3. Dr Aarthi Narayanan (Resident)
4. Dr Hiren Bilwal (Assistant Professor)
5. Dr Pratik Shaparia (Associate Professor) (corresponding Author)

Department of Surgery, Smt. B.K.Shah Medical Institute and Research Centre, Sumandeep Vidyapeeth deemed to be university, Pipariya, Vadodara.

Article Info

Volume 6, Issue 10, 2024

Received: 20 May 2024

Accepted: 15 June 2024

doi:

10.48047/AFJBS.6.10.2024.6555-6559

ABSTRACT:

Aims and Objectives: The aim of the study were Comparative study between suture v/s stapler in open inguinal hernia repair Comparing factors like Surgical site infection; Post operative pain; Post-operative scarring; Wound dehiscence; Cosmetic appearance; Cost effectiveness.

Materials and Method: A total of 400 cases were included in this study with prior informed consent.

Study duration: The study was carried out over a time period of two years from May 2015 to January 2024.

Study design: The present study was prospective, observational, and comparative.

Conclusion: Several methods of skin closure are available to close the skin incisions in place of sutures like staples, clips, steristrips and glue adhesives. Wound infection is a great hazard in abdominal skin closure as it can lead to disastrous complications. Cosmesis is essential and important aspect in this day of modern surgical practice. A cosmetic scar gives satisfaction to the patient and also to the surgeon. Preventing wound infection is necessary as it may lead not only to an ugly scar but also occurrence and recurrence of hernia. In our study, comparison of inguinal incision with staples and vertical mattress sutures was done. We found that: 1) Incidence of post operative wound infection was less with skin staples. 2) Skin staples provided better cosmesis than the vertical mattress skin closure. Hence, we conclude that the use of skin staples in low tension incision is easy, associated with low incidence of wound complications, provides good cosmetic outcome and also takes considerably less time for skin closure and thus recommend its use more frequently especially for closure of long and multiple incisions.

Keywords: Incision, inguinal hernia, stapler

INTRODUCTION:

The skin is an organ of astonishing complexity. It is a barrier between the human body and external environment and is protective and self-repairing. It is strong, elastic, and water-resistant and acts as a sense organ to a number of stimuli. The skin is also the largest organ of the body and also the protective covering. When the surgeon sutures a clean incision, healing takes place with minimum loss of tissue and without significant bacterial infection with minimal scarring. With passage of time and availability of newer methods of skin closure, it has become an art with stress on better cosmetic results.

Any method of skin closure should provide adequate approximation of the tissue to allow wound healing with minimal risk of infection and should produce an acceptable cosmetic result. The method should be simple, quick to use and cost effective. Since long the art of suturing is emerging continuously for the betterment of the patient in terms of cosmetic appearance – minimal scar, decreasing the risk of infection better patient compliance thus overall decreasing the morbidity. We have undertaken a comparative study of 400 cases between suture and stapler in open inguinal hernia repair to compare the merits and demerits of the techniques.

MATERIALS AND METHODS:

The aim of this study is to compare two skin closure techniques – suture and stapler in open inguinal hernia. A total of 400 cases were included in this study with prior informed consent.

Study duration The study was carried out over a time period of two years from May 2015 to January 2024

Study design The present study was prospective, observational, and comparative. **Patient selection** All those patients who were attending Surgery department (elective and emergency) and underwent open inguinal hernia surgery.

Closure technique After the subcutaneous fat was sutured with 2-0 Vicryl,

- 1) Suture Group: Skin was approximated with vertical mattress sutures using non-absorbable 2-0 Ethilon(monofilament polyamide black) at a distance of 1 cm from each other.
- 2) Stapled Group: The staples are used to close the wound and are placed at a distance of 5mm from one another.

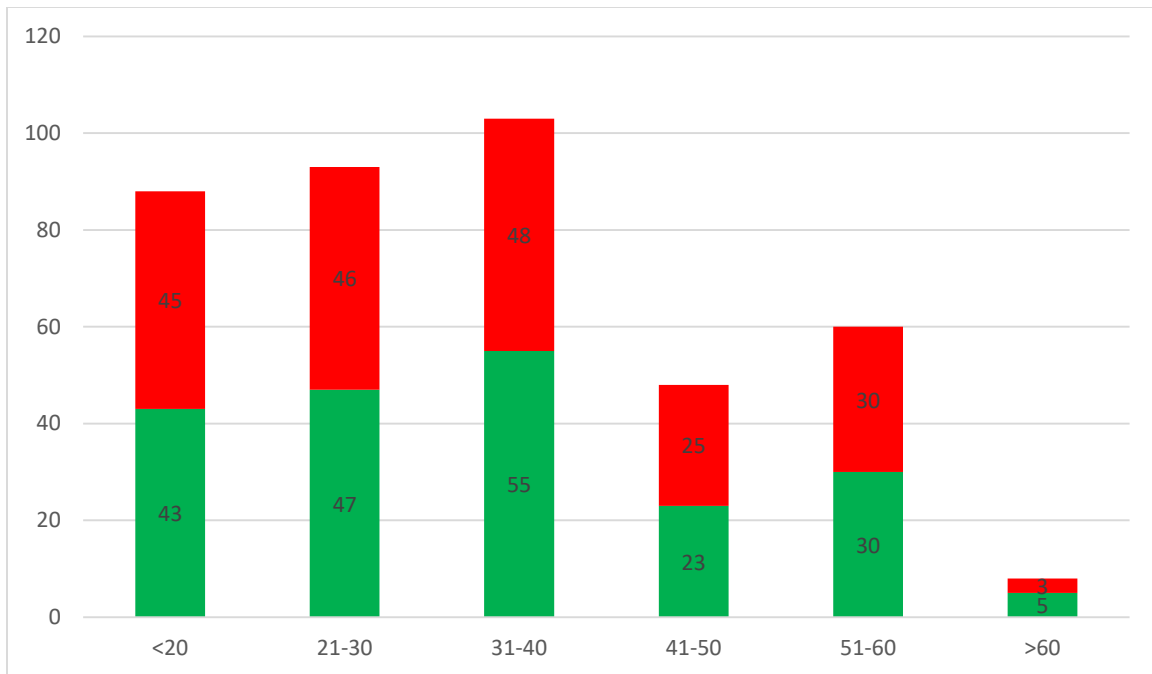
OBSERVATION AND RESULTS

This comparative study was done over a period from May 2015 to January 2024 in our hospital. 400 cases were studied and were randomly divided in two groups each of 200 cases:

Group (A) patients in which Skin closure done with nonabsorbable suture material. i.e. Polyamide 2-0 (vertical mattress suture) Group (B) patients in which Skin closure done with skin stapler.

The results were analyzed from the observations made and are tabulated as follows:

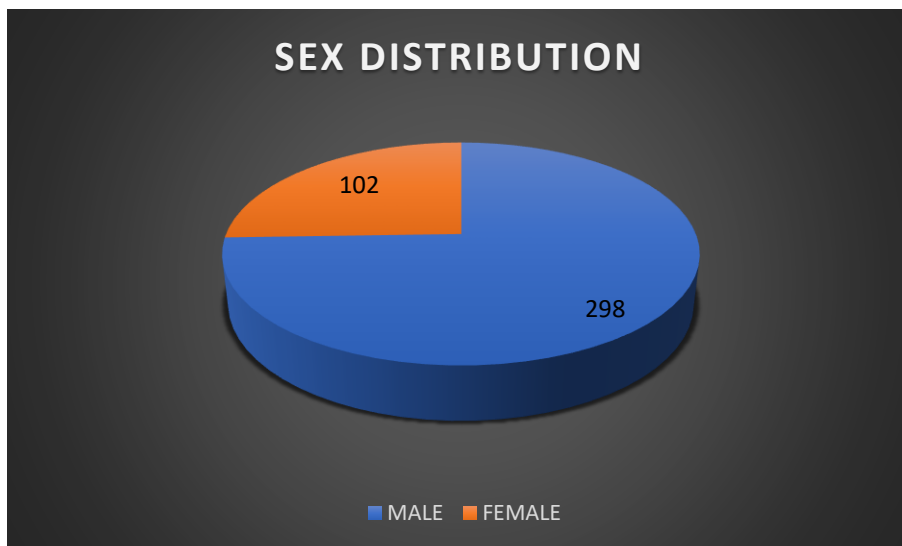
1. Age Distribution:



The age of the patients in the study varied from less than 10 years to more than 60 years. The number of patients in age groups <20 (A-43 ,B-45), 21-30 (A-47,B-46),31-40(A-55,B-48), 41-50(A-23,B-25), 51-60(A-30,B-30), >60(A-5,B-3).

There was no significant difference between 2 groups.

2. Sex Distribution

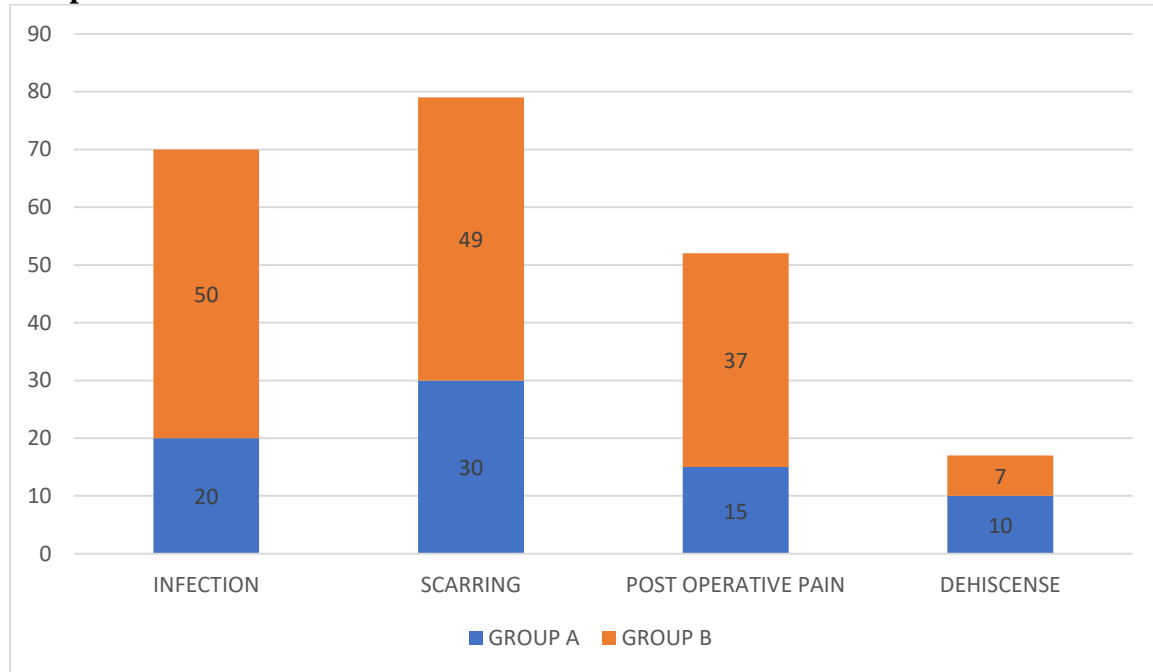


Inguinal hernia is common in males as compared to females.

3. Stich removal in stapler and suture

With stapler group stitch removal done in 172 patients within 7-10th days, in 28 patients within 11-14th days. With suture group stitch removal done in 164 patients within 7-10th days, in 30 patients within 11-14th days and in 6 patients after 14th days.

4. Complications:



Infection, scarring, postoperative pain was common in Group B while dehiscence was more in Group A.

DISCUSSION:

Wound closure is as important as any other action performed by the surgeon. And apart from the need for producing a healthy and strong scar, it is the surgeon's responsibility to ensure its aesthetically pleasing physical appearance. Skin staples are an alternative to regular sutures in offering this advantage. Sutures are used to facilitate the process of wound healing by: 1) Closing dead space within wound 2) Supporting wounds until their tensile strength is increased 3) Approximating skin edges. Sutures initiate a foreign body response (i.e. tissue reaction). The initial tissue reaction is attributed to the injury inflicted by the passage of suture and needle and reaction to the suture material itself. The reaction of living tissue to injury or foreign bodies is called inflammation. The inflammatory response usually peaks between 2 to 7 days after implantation. The longer a suture mass stays in the human body, the more likely it is to produce undesirable tissue reactions. For the surgeon, a scar may be the only trademark of the surgical procedure performed, as FitzGibbon has stated, "By your scars you will be judged." (Fitz Gibbon, 1968). In our present study, Regarding post operative surgical site infection is two times

more in suture (50 patients) than in stapler (20 patients) which was justified by the study of Stillman and colleagues[1], study of Iavazzo and Gkegkes ID[2], Eldrup[3].

Post operative pain over surgical site, wound pain is more in suture group than in stapler group which is correlated with the study of Ritchie AJ [4] and with the study of D. Gatt, C. R. Quick [5].

Post operative wound dehiscence, wound dehiscence is more in stapler group than suture group which is correlated with the study of Stillman and colleagues [6] and with the study of Vouloumangu EK[7].

Our study showed that stapler was fast to take than suture with superior scar formation which was cosmetically more appreciated by patient. In the present study, wounds closed using sutures showed higher rate of wound complication as compared to wound closed with stapler. Skin staples have several advantages over conventional sutures. They are quick and easy to use. Cosmetically, they produce good wound eversion and have a minimal cross hatch scar. Skin staples are relatively inert and can be left in situ for a longer period of time without any complications and in addition, patient can take a bath in the early postoperative period.

Conclusion.

The use of skin staples in low tension incision is easy, associated with low incidence of wound complications, provides good cosmetic outcome and also takes considerably less time for skin closure and thus recommend its use more frequently especially for closure of long and multiple incisions.

References

- [1] Stillman RM, Bella FJ, Seligman SJ, Skin Wound Closure: The effect of various wound closure methods on susceptibility to infection. *Arch Surgery*, 1980; 115:674-680.
- [2] Iavazzo C, Gkegkes ID, Vouloumangu EK, Mamais I, Peppas G, Falagas ME. Randomized controlled trial for suture vs. stapler for management of surgical wounds. *Am Surg*. 2011 Sep; 77(9):1206-21.
- [3] Eldrup Randomized controlled trial compared stapler with conventional skin closure.
- [4] Ritchie AJ *et al* carried out a prospective double blind randomized study comparing staples versus sutures in the closure of scalp wound and found that stapling was significantly faster and less painful.
- [5] Stockley I, ElsoEldrup J, Wied U, Andersen B. Randomised trial comparing Proximate stapler with conventional skin closure. *Acta Chir Scand*. 1981; 147(7): 501–502.
- [6] Stillman RM, Bella FJ, Seligman SJ, Skin Wound Closure: The effect of various wound closure methods on susceptibility to infection. *Arch Surgery*, 1980; 115:674-679.
- [7] Iavazzo C, Gkegkes ID, Vouloumangu EK, Mamais I, Peppas G, Falagas ME. Randomized controlled trial for suture vs. stapler for management of surgical wounds. *Am Surg*. 2011 Sep; 77(9):1206-21.
- [8] Medina dos Santos LR, Freitas CAF, Hojaji FC *et al*. Prospective study using skin staplers in head and neck surgery. *AM J Surg*. 1995; 170-451-452.