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Effect of Skin Staples and Conventional Suture for Abdominal Wound Closure

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ABSTRACT

The principle aims of tissue repair of surgical skin incisions are rapid acquisition of strength and minimum tissue damage with minimum inflammation and a good scar. Many factors including the choice of suture materials and its placements influence these aims. But of particular relevance is the accurate co-optation of dermal edges, eversion or inversion leads to sub optimal healing. The study was conducted on 100 patients who underwent elective surgery. Randomly selected patient, to receive either suture or staple repair. The appearance of the scar among the staple groups was good in 90% of those who returned for follow up at one month, 10% had average scar, with widening or hypertrophy of the scar with itching. The cosmetic appearance of the scar was good in 60% of the cases in the suture group, with 30% with average and 10% poor scars.

INTRODUCTION

Surgery is derived from the earlier name *chirurgery*, which means handwork. It is a science and art that shows the manner how to work man's body exercising all manual operations necessary to heal or as much as possible by using of most expedient medicines^[1]. Brilliant developments of surgical skills and instrumentation have provided a precise understanding of an operative intervention. Today most surgical procedures are assessed by rigorous scientific methods and such procedures become reproducible and predictable. Elaborate algorithms are available to calculate the requirement to replace or repair, to lengthen or shorten, to ablate or enhance, to drain or not^[2]. However traditional axioms are often contravened. Urgent operations and insertion of foreign bodies are undertaken when one is confronted with acute sepsis., adhesive and staples are substituted for sutures., balloons challenge the bypass and lasers, the scalpel. The essence of modern surgeon is now, more than ever before, that quality called *J U DGEMENT*-the ability to know what to use, when to use it and for how long. Any surgical intervention will result in a wound in order to get access to and deal with underlying pathology. In this situation surgeon's task to minimize the adverse effects of wounds, remove or repair the damaged structures and harness the process of wound healing to restore function^[3]. The principle aims of tissue repair of surgical skin incisions are rapid acquisition of strength and minimum tissue damage with minimum inflammation and a good scar. Many factors including the choice of suture materials and its placements influence these aims. But of particular relevance is the accurate co-rotation of dermal edges., eversion or inversion leads to suboptimal healing. For many years it has been possible to approximate the skin edges using sutures. However, sutures have the disadvantages of consuming more time in applying with a cosmetically inferior scar. The use of automatic stapling device for skin closure has become more popular of late to overcome these disadvantages. At the present time cost effectiveness of these is debatable^[4].

MATERIALS AND METHODS

The study was conducted on 100 patients who underwent elective surgery. Randomly selected patient, to receive either suture or staple repair.

Method of Collection of Data:

During Operation: From operating surgeon.

Post Operatively: From patients input.

Supply of Suture and Staples: From pharmacy and company.

Follow up Patients: Patients coming for follow up to outpatient Department After hospitalization.

Inclusion Criteria: Patients undergoing elective abdominal surgery, with clean wound.

Exclusion Criteria: Patients having lacerated wounds with skin loss.

RESULTS AND DISCUSSIONS

Table 1: Classification of Wounds

Group	A (1-5cms)	B (1-5cms)	C (1-5cms)
Staplers	33	07	10
Sutures	34	08	08

Table 2: Patient Acceptance

Scars	Staplers	Sutures
Good	90%	60%
Not good	10%	40%

Table 3: Pain Score

	Staplers	Sutures
Ranaboldo CJ	4.79	3.9
Pain while removal (scale 10)	1	6

Table 4: Complications

	Staplers	Sutures
Medina <i>et al.</i>	5/20	3/20
J K Kanagaye <i>et al.</i>	2/45	--

The difference between the two techniques was most striking in the group C wounds, which were longer than 10cm. Among group A wounds also there was a statistically significant difference between the stapler and suture groups. The average time taken for application of stapler in group C wound was 60 seconds whereas for the suture group, it was 240 seconds. Subjective quantification of the pain during suture removal showed that most of the patients registered score of 5 and 6. Among the stapler group of patients most of the patients registered score of 1. The appearance of the scar among the staple groups was good in 90% of those who returned for follow up at one month, 10% had average scar, with widening or hypertrophy of the scar with itching. The cosmetic appearance of the scar was good in 60% of the cases in the suture group, with 30% with average and 10% poor scars. The average saving of just over three minutes in closing a 15cm wound with staples could be extrapolated to a gain of 15-20 minutes on an average operating list. Apart from the more efficient use of theater time, the psychological effect of rapid wound closure at the end of a long operation on surgeon and theater staff was very evident during this trial. Continuous sutures save some time but have been shown to take two minutes longer than staples over 15 cm. 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. The present study has helped to highlight the benefits of skin stapler^[5]. In the present study, there was no significant difference between the results of application of staplers or sutures at various anatomic regions. The commonest region of the surgical wounds in this study was Mcbumey's, 23 in staplers and 23 in suture group. The scar appearance was good in 90% of the patients who were available for follow up, which is similar to other studies. Medina dos Santos *et al.*, have compared the cosmetic results of staplers with non-continuous nylon sutures. They have observed that the wounds closed with staplers were cosmetically superior in 80% of the cases. There are no studies available in the literature comparing the results of application staplers to various anatomic regions. Though Ranaboldo and Rowe-Jones have compared the results of stapler with subcuticular absorbable sutures for laparotomy wounds and divided them into lower and upper abdominal regions, no mention was made by them regarding the appearance of the scar at various sites^[6]. There was no significant benefit of staplers over subcuticular sutures in their study^[6].

CONCLUSION

- The age ranged from 2 year-75 years in both the groups.
- There was a slight female preponderance in the staple group as compared to the suture group.
- Inguinal region was the commonest anatomical region in both groups.
- The surgical wounds were categorized into A, B and C depending on the wound length., <5cm, 5-10 and >10cm respectively.

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