

Original article:

Study of distribution of cases in relation to the Types of suturing:

Observational study

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Abstract

Introduction: Securing wounds is possible by knot or by recently developed barbed suture. Sutures require knots so as to ensure optimal tissue closure strength. The goal of wound closure is to bring the edges of the wound together not only with sufficient strength to prevent dehiscence, but also with a minimal residual tension and compression of the tissue

Methodology: The observational study was conducted based on 4 types of suturing techniques namely simple suture, mattress sutures, tension sutures, subcuticular sutures on different abdominal incisions for different cases. Ethical committee clearance was taken prior to the start of the study. Written informed consent was taken from the patients prior to the surgery for participation in the study.

Results and Conclusion: Simple and subcuticular sutures are easy to take with fewer complications giving good cosmetic results.

Introduction

Securing wounds is possible by knot or by recently developed barbed suture. Sutures require knots so as to ensure optimal tissue closure strength. The goal of wound closure is to bring the edges of the wound together not only with sufficient strength to prevent dehiscence, but also with a minimal residual tension and compression of the tissue.¹ With the first wave of bioactive sutures already in the marketplace, research is ongoing in the development of future products. Such sutures could potentially have not only antimicrobial activity but also anaesthetic and anti-neoplastic functions. Some clinical trials have already been completed in Russia. ¹This technology is likely to become commonplace.² The desired characteristics of suture materials are Easy to handle, Predictable behaviour in tissues, Predictable tensile strength, Sterile, Glides through tissues easily, Secure knotting ability, Inexpensive, Minimal tissue reaction, Non-capillary, Non-allergenic, Non-carcinogenic, Non-electrolytic, Non-shrinkage.³

Methodology

The observational study was conducted based on 4 types of suturing techniques namely simple suture, mattress sutures, tension sutures, subcuticular sutures on different abdominal incisions for different cases. Ethical committee clearance was taken prior to the start of the study. Written informed consent was taken from the patients prior to the surgery for participation in the study. A total of 120 randomly selected cases with different abdominal incisions and

different suturing techniques associated with co-morbid factors were selected. These cases have been observed from post-operative day 1 to 14 for any normal or abnormal changes, and the findings were noted.

Results:

TABLE NO. 1: Distribution of cases in relation to the Types of suturing.

Diagnosis	Types of Suturing techniques				Total no. of cases
	Simple	mattress	subcuticular	Tension	
intestinal obstruction		1		13	14
intestinal perforation				17	17
inguinal hernia	15	11	15		41
Paraumbilical hernia		9			9
Appendix	8		11		19
perforated appendix		3			3
vesical calculi	5	2			7
incisional hernia		3			3
epigastric hernia		1			1
lipoma	1		2		3
sebaceous cyst	1		2		3
total cases	30	30	30	30	120

Discussion

The high rates of infection in emergency surgeries can be attributed to inadequate pre-operative preparation, the underlying conditions which predisposed to the emergency surgery like uncontrolled diabetes or other medical co morbidities. The subcuticular suturing technique did not lead to any surgical site wound infection and wound dehiscence. Results in our study are consistent with the above mentioned studies.⁴ Studies have shown that number of days spend in hospital is directly proportional to increased rate of post-operative surgical site infection. Prolonged postoperative hospitalization, which is a major concern of most of the hospitals, was evident in patients developing surgical site infection.

In this technique eradicating the subcutaneous dead space and optimizing the management of postoperative incisions is of optimal concern. Recently, subcuticular sutures have been reported to reduce the incidence of incisional surgical site infection as stated by Watanabe A, Kohnoe S, et al. In the study conducted in 2008 and 2012.⁵

One of the main factors influencing wound healing is the blood supply to the wound. The measurement of blood flow in patients treated with three different abdominal closure techniques (clips, mattress sutures, and subcuticular sutures) showed significantly higher blood flow values in wounds closed with subcuticular sutures in a study conducted by Zografos GC, Martis K, Morris DL.⁶

Subcuticular suturing reduces skin irritation while providing excellent skin-edge apposition and eversion. This technique decreases wound tension and scar formation. By virtue of the subcuticular suture placement, suture track formation (railroading) and the percutaneous migration of bacteria into the wound do not occur.³ Typical closures are closely approximated with good edge eversion and no clinically significant inflammation.

Conclusion

Simple and subcuticular sutures are easy to take with fewer complications giving good cosmetic results.

References:

1. J.M. Carciapaez et al, Resistance and Elasticity of the Suture Threads employed In Cardiac Bioprostheses. *Biomaterials*, vol 15, No 12, (1994), pp.981-984.
2. Peter C. Neligan, Bioactive Sutures F.R.C.S.(I.), F.R.C.S.C., F.A.C.S. Plastic Surgery Educational Foundation Technology Assessment Committee Toronto, Ontario, Canada. *Plastic and Reconstructive Surgery* • December 2006. Pp-1645-1647.
3. Williams Bulstrode O'Connell. Bailey and Love's, Short Practice of Surgery, 26th edition. Pp 33-34.
4. Surgery of the skin procedural dermatology. Ed Robinson JK, Hanke CW, Sengeimann RD, Siegel DM, Elsevier Mosby 2006.
5. D. Mackenzie. The Scottish Society of the history of medicine. An international journal for the history of medicine and related Sciences, april 1973; 158-168.
6. Nelson R. L. Nyhus L.M. surgery of small intestine,.Pg 3,1987