

Original article:

Study of different Modalities of Abdominal Skin Suturing Techniques In Various Abdominal Skin Incisions

Dr R N Patil , *Dr Dilip Apturkar , Dr Janvi Tomar

Department of Surgery, Rural Medical College, Pravara Institute of Medical Sciences (DU) Loni
Corresponding author*

Abstract

Introduction: Suture is a generic term for all materials used to bring severed body tissue together and to hold these tissues in their normal position until healing takes place. Sutures which are used in surgical purpose for field of medical textiles are now a most demand in approximation of different type of tissues. Sutures are used to re-approximate the divided tissues and ligation of the cut end vessels.

Methodology : All the patients above the age of 12 years irrespective of gender who were undergoing abdominal surgeries in Our rural hospital and getting sutured by either simple, mattress, subcuticular or tension sutures, and giving written informed consent for inclusion in the study, were included in the study.

Results and Conclusion: From this study we may conclude , simple and subcuticular sutures are easy to take with fewer complications giving good cosmetic results while Mattress and tension sutures are preferred for infected cases.

Introduction:

Suture is a generic term for all materials used to bring severed body tissue together and to hold these tissues in their normal position until healing takes place. Sutures which are used in surgical purpose for field of medical textiles are now a most demand in approximation of different type of tissues. Sutures are used to re-approximate the divided tissues and ligation of the cut end vessels. If the suture fails to perform the above said functions, the consequences may be disastrous. ¹Massive bleeding may occur when the suture loop surrounding a vessel is disrupted.¹Securing 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.²

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. This technology is likely to become commonplace.³The 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.⁴

Material and methods

It was descriptive longitudinal study. Written informed consent, in the patients language, was taken from the patients prior to the surgery for participation in our study. The study was conducted on patients admitted in department of

general surgery, in a rural based hospital from September 2015 to September 2017. A total of 120 cases undergoing abdominal surgeries in general surgery department were included in the study. The patients satisfying the inclusion and exclusion criteria were included in the study.

Inclusion criteria: All the patients above the age of 12 years irrespective of gender who were undergoing abdominal surgeries in Our rural hospital and getting sutured by either simple, mattress, subcuticular or tension sutures, and giving written informed consent for inclusion in the study, were included in the study.

Exclusion criteria: Patients undergoing gynaecological, obstetric, laproscopic, paediatric, burns and plastic surgery cases were excluded from the study.

Four groups were made, one for each type of abdominal skin suturing technique i.e. simple sutures, mattress sutures, tension sutures and subcuticular sutures. Cases were selected randomly for the study.

A detailed history and clinical examination was conducted. After clinical diagnosis, the patients were subjected to necessary laboratory investigations, radiographs, ultra sonography and CT scan where ever necessary.

TABLE NO. 1: Distribution of cases based on wound type		
TYPE OF WOUNDS	NO. OF CASES	%
Clean	59	49.16
Clean contaminated	27	22.5
Contaminated	34	28.33
Dirty	0	0

Further distribution of cases based on type of wounds:

TABLE NO. 2: CLEAN TYPE OF WOUNDS

Types of sutures	Diagnosis					
	Inguinal hernia	Para umbilical hernia	Incisional hernia	Epigastric hernia	Abdominal wall lipoma	Sebaceous cyst
Simple	15	0	0	0	1	1
Mattress	11	9	3	1	0	0
Subcuticular	14	0	0	0	2	2
Tension	0	0	0	0	0	0

TABLE NO. 3: CONTAMINATED TYPE OF WOUNDS

Types of suturing	Diagnosis		
	Intestinal obstruction	Intestinal perforation	Perforated appendix
simple	0	0	0
Mattress	1	0	3
Subcuticular	0	0	0
tension	14	17	0

Discussion:

In our study we observed post-operative wounds of 120 cases of abdominal surgeries carried out in our hospital in the department of general surgery over a period of 2 years. 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. Elective and emergency cases were randomly selected for the study. Pediatric age group, laparoscopic surgeries, burn cases, Obstetrics and gynaecology cases were excluded. The 120 cases were divided in four groups of 30 cases each of simple sutures, mattress sutures, subcuticular sutures and tension sutures. The wound assessment was done on post-operative day 3, 7 and 14. We assessed the wounds with the variables like pain, redness, hematoma formation, serous discharge, pus discharge, complete wound dehiscence for all the 120 cases and the findings were noted. The cases included in our study were clean, clean contaminated and contaminated type of cases. Co-morbidities like diabetes, hypertension and hypoproteinemia of the cases were also noted. Pus was sent for cul In our study, out of 120 cases 49.16% cases were clean type, 27% were clean contaminated type and 28.33% were contaminated type. ⁵

The incidence of rate of surgical site infections in our study as per the wound classification is described below comparing with Cruise and Foord Assessment in 1980.⁶ Ravi Taori and Mukund Tayade, et al (Sir JJ Hospital study)⁷, SP Lilani, N Jangale, et al. Incidence of wound site infection according to type of wound : A cross sectional study of 2012 in USA observed that the clean, clean-contaminated, contaminated, and dirty wound classifications had superficial SSI rates of 1.76%, 3.94%, 4.75%, 37 and 5.16%, respectively.⁸ In 2012, a study done in a tertiary care hospital in Gujarat showed incidence of 40.9% in dirty wounds. Satyanarayana V et al have done a study in 2011 in India showing incidence of 56.7% in dirty wounds.

Conclusion:

From this study we may conclude , simple and subcuticular sutures are easy to take with fewer complications giving good cosmetic results while Mattress and tension sutures are preferred for infected cases.

References:

1. C. C. Chu, Mechanical Properties of suture materials. Ann. Surg. Mar(1981).
2. 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.
3. 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.
4. Williams Bulstrode O'Connell. Bailey and Love's, Short Practice of Surgery, 26th edition. Pp 33-34.
5. PJ, Foord R. The epidemiology of wound infection: a 10-year prospective study of 62,939 wounds. SurgClin North Am 1980; 60(1): 27-40
6. Patel Sachin M, Patel Mitesh H, Patel Sangeeta D et al. Surgical Site Infections: Incidence And Risk Factors In A Tertiary Care Hospital, Western India. National Journal of Community Medicine. April-June 2012; Vol. 3(2): 193-96
7. Ravi Taori, MukundB.Tayade, et al. , A study of incidence of surgical site infection and associated risk factors at a tertiary care hospital in mumbai, india , Indian journal of research .august 2017; vol.6(8): 11-14., 2004