

Removal of Skin Sutures on the 5th Post-Operative Day in Obstetrics and Gynaecology.

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Abstract

Context: Traditionally, abdominal skin sutures are removed on the 7 - 9th post-operative day without any strong scientific evidence. Standard general surgical, obstetrics and gynaecological textbooks dwell on wound healing but timing of abdominal skin suture removal is rarely mentioned.

Objective: To determine whether there is wound union following early removal of skin sutures on the 5th post-operative day after obstetric and gynaecological surgeries.

Study Design/Setting/Subjects and Methods: A prospective study of 166 patients who had major abdominal surgeries in the department of obstetrics and gynaecology, University of Port Harcourt Teaching Hospital (UPTH) was carried out. Eighty three patients (intervention group), attended antenatal and gynaecology clinic on Mondays while the rest, 83 (control group), attended the clinic on other days of the week. Suture materials used on the skin were either No.0 or 2/0 nylon or silk and the suture technique was interrupted mattress.

Outcome Measure: Wound union following removal of skin suture on the 5th post-operative day.

Results: There was wound union on removal of sutures on the 5th post-operative day in 85.5% of the patients. This was not different from the control group ($\chi^2=0.4, p=0.5$).

Conclusion: Skin sutures following major abdominal surgeries can be removed on the 5th post-operative day, thereby reducing socio-economic burden of extra 3-4 days of hospitalization.

Key Words: *Abdominal wound, skin suture removal, 5th post-operative day.*

Introduction

The timing of removal of skin sutures on the anterior abdominal wall following a major obstetric and gynaecological operation differs from one surgeon to the other. This difference is as a result of what was learnt from various consultants or trainers during the years of residency training. There is no strong scientific evidence to support the proper timing of skin suture removal in obstetric and gynaecological surgeries. The same evidence may be lacking with the general surgeons.

Healing of a clean incised wound involves initial haemorrhage resulting in the formation of fibrin rich haematoma followed by an acute inflammatory reaction leading to the formation of fibrinous exudates that cement the cut margins of the wound together. Within 24 hours of injury epithelial cells from the adjacent epidermis migrate into the wound and insinuate themselves between the inert dermis and clot. With well approximated wounds, by 24 hours a continuous layer of epidermal cells covers the surface. In the next 48 hours the epidermal cells invade the space where connective tissue will eventually develop; in this way epithelial spur is formed. Mitotic activity occurs in the basal cells a short distance from the edge of the wound, and in mouse this activity is maximal at 36 hours¹.

Skin sutures are left in place for different periods depending on the area of the body that has been sutured. In general, early skin suture removal (4-5 days) is possible in an area with excellent blood supply like the face and neck². Most of the skin elsewhere on the body requires suture support for 8-11 days to achieve

adequate wound healing. Few authors state a suture removal range of 5-10 days when primary epidermal closure takes place.

Wound healing is determined by various factors including adequate oxygen delivery, amount of tension on the wound edges, nutritional status, prior radiation therapy, concurrent chemotherapy, exogenous steroid administration and haematoma².

Interrupted mattress suture technique was used for skin closure. This is one of the commonly used skin closure methods as it promotes skin edge eversion and less prominent scarring¹. Although mattress suture can produce surface scarring or "rail-road tracks" early removal limits this damage. This study aims at determining whether there is union of abdominal wound following early removal of skin sutures on the 5th post-operation day in obstetrics and gynaecology.

Materials and Methods

A randomized controlled trial involving 166 patients was carried out in the department of Obstetrics and Gynaecology, UPTH, Nigeria. The intervention was the removal of skin sutures on the 5th post-operative day while the outcome measure was wound union following suture removal. Wound union was defined as coming together of the two wound edges without an intervening

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raw area after suture removal. All the patients had major abdominal surgeries. Eighty three patients (intervention group) attended the antenatal and gynaecology clinic on Mondays while 83 (control group), on other days of the week (Quasi random allocation).

The skin incisions made were either midline subumbilical or transverse suprapubic (Pfannenstiel). The suture materials used on the skin were No.0 or 2/0 nylon or silk. There was no special pre-operative or post-operative preparation apart from the routine. All the patients had post-operative antibiotic therapy. Patients who had subcuticular sutures were excluded. By means of worksheet constructed for the purpose, bio-social data, indication and type of operation, abdominal incision made and type of suture materials were recorded. Since the study was a departure from the traditional norm of removal of sutures between the 7th 9th day, approval was sought and obtained from the ethical committee of the hospital.

Statistical analysis was by EPI-INFO V6.04d. Chi-square test of significance was used to test the difference in proportion of cases with the outcome measure between the 2 groups at 0.05 significance level.

Table 1:

Age Distribution of the Patients

Age group(years)	Study group		Control	
	No.	%	No.	%
20-24	11	13.3	12	14.5
25-29	23	27.7	24	29.0
30-34	34	41.0	35	42.1
35-39	12	14.4	10	12.0
40-44	3	3.6	2	2.4
>45	-	-	-	-
Total	83	100.0	83	100.0

Results

A total of 166 patients who had abdominal surgeries during the study period who satisfied the criteria were analysed. Eighty-three (50%) patients were in the intervention group while 83 (50%) formed the control group. Table 1 shows the age distribution of the patients who had major abdominal surgeries. Majority of the patients (40.9%) aged between 30-34 years. No patient was below the age of 20 or above 45 years. The control had the same biological characteristics.

Table 2 shows the indications for surgery, types of incisions and suture materials used for skin closure. One hundred and twenty-one (72.9%) patients had caesarean sections in both groups, 63 (38%) were elective while 58 (34.9%) were emergencies. Twenty-one patients (12.7%) had ectopic pregnancy and partial

salpingectomy was performed. Nineteen (11.4%) patients had uterine myomas, 14 (8.4%) had myomectomy and 5 (3.0%) had total abdominal hysterectomy. Table 3 shows the type of suture material used in closing the skin. In both groups, nylon was used in 152 (91.6%) while 14 (8.4%) had silk sutures. Table 4 shows that fourteen (8.4%) patients had Pfannenstiel incision while subumbilical midline was done for 147 (88.6%) in both groups.

Table 5 shows the outcome of removal of sutures on the 5th post-operative day. Seventy one (85.5%) patients had primary wound union while 12(14.5%) had non-union in intervention group. In the control group 68 (81.9%) patients had primary wound union as against 15 (18.1%) who had non-union. Stastical analysis of the two groups showed that there was no difference (c2 = 0.4, p = 0.5). Of the 12 patients (14.5%) who had non-union in the intervention group, six of them were operated on while the theatre lacked linen and the surgeons worked with only gloves without sterile gowns. Four had prolonged labour while the other two had urinary peritonitis due to unrecognized injury to the bladder and eclampsia respectively. They all had wound infection.

Discussion

The proper timing of skin suture removal in obstetrics and gynaecology has not been adequately documented, hence there is lack of information on suture removal. Literature search on this topic yielded little or no information. The timing of suture removal after major abdominal surgeries has varied among obstetricians, gynaecologists and general surgeons working in the same department. Each decides empirically on the day of skin suture removal without any scientific basis.

Sutures are used for closing wounds in all body tissues and are the most frequently implanted foreign materials⁸. The purpose of the suture is to hold tissue in position until healing is sufficient for the continued presence of the suture to be unnecessary. Suture left longer than is necessary leaves a “tram-line” scar unless an absorbable subcuticular technique is used⁴. The major support of the anterior abdominal wall is the fascial layer and not the skin. The overall general and nutritional states of the patient in this study were good which characterized this age group. Wound healing (incised surgical wound) unassociated with contamination or devitalized tissue is good in the young as seen in the study. Union of skin wound was therefore satisfactory on the 5th day after suture removal.

The indications and type of surgery performed appear not to have any influence on the result of removal of skin sutures on the 5th day as union was successful in 85.5% of the patients. This was comparable in the control group where removal was carried out between 7- 9 days.

Table 2:
Types of Surgery, Abdominal Incisions and Suture Materials Used

	Study Group		Control	
	No. N = 83	% 100%	No. N = 83	% 100%
Type of Surgery				
Emergency Caesarean Section	31	37.3	32	38.6
Elective Caesarean Section	28	33.7	30	36.1
Ectopic pregnancy (partial salpingectomy)	10	12.1	11	13.3
Myoma (myomectomy)	8	9.6	6	7.2
Myoma (total abdominal hysterectomy)	3	3.6	2	2.4
Laparotomy for ruptured uterus	3	3.6	2	2.4
Abdominal Incision				
Pfannenstiel	6	7.2	8	9.6
Midline Subumbilical	77	92.8	75	90.4
Type of Suture Material				
Nylon	78	94.0	74	89.2
Silk	5	6.0	9	10.8

Table 3:
Outcome of Suture Removal on the 5th Post-Operative Day

Outcome	Study group		Control	
	No.	%	No.	%
Wound Union	71	85.5	68	81.9
Wound Non-Union	12	14.5	15	18.1
Total	83	100.0	83	100.0

($\chi^2 = 0.4, p = 0.5$)

Seventy one patients had primary wound union following removal of sutures on the fifth day constituting 85.5% of the patient studied as against 81.9% in the control group. Wound infection occurred in 12 patients as against 15 among the control. The sutures were removed in those patients on the 5th day. Leaving the sutures in situ longer in the presence of infection is against surgical principle as the treatment of infected wound is removal of suture, drainage and dressing. Wound infection is influenced by a variety of factors namely, occlusive vascular disease (ischaemia), vasoconstriction and hypovolaemia². To prevent wound infection, factors leading to ischaemia should be avoided during skin wound closure. Suture should not be placed too tightly, patient should be kept warm, pain should be controlled to prevent catecholamine mediated vasoconstriction and hypovolaemia should be avoided. This will allow tissue perfusion, the ultimate determinant of wound oxygenation and nutrition to occur.

For extra day spent by a patient in the hospital the financial cost is estimated at N280.00 for bed and nursing fees excluding consumables and drugs. The expenditure incurred by relatives and well wishers by their visits can not be quantified. Besides, there is social family disruption with the patient in hospital. For working class patients, extra-days out of work matter as the director and / or bosses would want a quick return to their duty post(s) for continued production.

It is recommended that skin sutures following abdominal surgeries in obstetrics and gynaecology be removed on the 5th post-operative day since its support to secure wound edges is no longer needed. In addition, early suture removal will lead to the reduction of deleterious social and economic consequences of extra 3-4 days of needles hospitalization due to prolonged unnecessary retention of epidermal suture.

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