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Role of Subcutaneous drainage in Open urological Surgeries

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Abstract: *In this study we have examined the use of subcutaneous drain in open urological procedures maintained for 72 hrs after surgey. After randomized Allotment differences were analysed in control group (n= 43) and study group with subcutaneous drain (n=43) , after subcutaneous drain removal .The results were gratifying with significantly Lesser SSI ,inflammation and seroma , Lesss surgical site pain , Less Induration , lesser subcutaneous edema , early mobilisation , with Lesser duration of hospital stay. The 20 point wound assessment score showed a 4 times more probability of wound related complications in the control group.*

I. Introduction

There is more subcuateous tissue with fat in the loin and lower abomen which is incised in open urological surgery. The tissues are moree in people who are obese and more complications are expected in diabetics and patients on immunosuppressents. The edema fluid , lymphatics collected in the surgical wound is more in the initial days post operatively. Such a subcutaneous wound environment affects perfusion of antibiotics ,mediates more chance of infection ,wound dehiscence and impairs normal wound healing.

The 'normal' wound healing process has been identified as involving three overlapping major phases: • inflammation, with cascades of processes that can be further subdivided into early (first 24 hours) and late phases (normally up to 72 hours) • regeneration • maturation. The wound healing process is a complex one that involves many interacting cells, cytokines and growth factors, carbohydrates and proteins, all of which cascade into and act within the wound margins and across the wound bed at different rates and at different speeds. The key cells that are involved in this process have been identified as: • inflammation – platelets, neutrophils, lymphocytes and macrophages • regeneration and maturation – macrophages and fibroblasts, the latter of which are linked with the deposition and regulation of collagen as well as wound contraction (myofibroblasts). Early inflammation (the first 24 hours) begins with haemostasis through vasoconstriction, thrombin formation and platelet aggregation. Platelets release cytokines and other factors that directly influence leucocyte and monocyte activity. Late inflammation (24–72 hours) involves the release of vasodilators and other agents that increase the permeability of the local capillary bed allowing serum and white cells to be released into the area surrounding the wound, through complex interactions of adhesion molecules, and other systems, in margination and diapedesis. The function of this phase of wound healing is to ensure that the wound bed is free of bacteria . Surgical site infection and other contaminants and to create the optimum environment for the production of granulation tissue and for epithelialisation. [1]

In a study by chowsri et al [2] on open cholecystectomy , likelihood of seroma formation without drains was 6.5 times and 9.3 times more in patients with subcutaneous fat thickness of 3–3.9 cm and 4–5 cm, respectively. 71.43% of patients in the control group and 54.55% patients in the study group who developed seroma presented in the first week of surgery. Prophylactic use of subcutaneous drains in obese patients undergoing cholecystectomy was found to reduce the seroma formation significantly. In another study by Alliare et al [3] the use of closed suction drainage in the subcutaneous reduced the incidence of postoperative wound complications in obese women who have at least 2 cm of subcutaneous fat and undergo cesarean delivery. Wound separation occurred in 12 (15.8%), seroma in 5 (6.6%) and infection in 3 (4%).In this study we examine the effect of subcutaneous suction drainage in open urological surgeries in the initial post operative period .

II. Methods

Inclusion : Average Thickness of subcutaneous tissue 1 cm assessed by MSK probe in USG in the loin /lateral abdominal wall for Open Renal surgeries. Surgical staplers were used for skin closure.Nylon was used for Perineal wounds. Romovac suction drain was used with 12 F Drain in the subcutaneous tissue in study group. Drain was removed after 72 hrs when the dressing was removed and wound kept open if it were healthy and outcomes were assessed postoperatively after sucutaneous drain removal and compared with control . Both

the groups patients received IV antibiotics (for 3 days in uncomplicated wounds),chymotripsin, NSAIDs when required and analgesics preferably opioids and paracetamol .Epidural analgesia was given for 48 hrs postoperatively.Patients with sepsis ,,previous incision on the same site and comorbid conditions were excluded from the study. Written informed consent has been obtained from all patients .The study confirms to standards of declarations of Helsinki .

Wound assessment 20 point score and Analysis in Groups

Control (n)	**score**	**study (n)**	**Control (n)**
Seroma	1	4	18
Separation /second suturing	3	1	7
Hematoma	2	1	3
Purulent Discharge	4	1	5
Hospital stay more than 7 days / expected + wound care	2	3	13
At fifth Post op day			
Subcutaneous edema on USG	1	7	31
Subcutaneous collection on USG	1	3	12
Dependent/Decreased mobilisation	1	5	13
Induration	2	9	29
Surgical site pain (severe/non tolerant /requiring IV opioids)	1	4	20
Surgical site tenderness elicited	1	6	31
Elevated Total Leucocyte counts	1	4	12
Total	**20**	**67**	**268**

Figure 1: Placement of subcutaneous Drain and wound inspection after 72 hrs. There was no Significant subcutaneous edema or collection. All the wounds healed well

Figure 3. Placement of subcutaneous drains in perineal procedures.

III. Results

The mean age of the study population was 36 yrs . Electrocautery was used for subcutaneous dissection..Skin incisions were made with surgical knife. The duration of surgery and total blood loss during surgery were similar in both the groups.The average subcutaneous drainage varies from 40 ml in POD 1 to 20 ml in POD 2 to 10 ml in POD 3. Incisions on groups. .Midline : 3 Modified Gibson 5. Subcostal 8 Loin : 24 Pfannensteil 3 (equal in groups) Nephrectomy (Simple and Radical) - 46 Ureteric reimplantation -4 Bladder injury repair – 2 ,Radical cystectoprostatectomy -2 Pyeloplasty – 20,Partial cystectomy -2 Cystolithotimy 4 perineal urethrostomy -2 Perineal urethroplasty -2 .Local rise of temp ,tenderness , were assessned at 5 th POD. A 20 point wound assessment score was used to assess the wounds in both the groups. The Mean score per study patient = 67/43 = 1.56 , and Mean score per control patient = 268/43 = 6.23 with the control and study group ratio being approximately 4 : 1

Figure 2: SSI in control group.The picture shows serous discharge from the Drain site without subcutaneous drain with subcutaneous tissue thickness of 3.6 cm and 2 cms in two different subjects.

The results were satisfying with significantly Lesser inflammation and seroma , Lesss surgical site pain ,Less Induration , lesser subcutaneous edema , early mobilisation ,early stapler removal with Lesser duration of hospital stay. All the wounds healed well finally with longer follow up in control group.

IV. Conclusion

The 20 point wound assessment score showed a 4 times more probability of wound related complications in the control group. We conclude that the use of subcutaneous drainage is useful in reducing surgical wound related complications in major open Urological surgery.

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