

A New Alternative Technique After Pfannenstiel Incision in Obese Women; Cutaneous Plication

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OBJECTIVE: Surgical wound infections are frequently observed in obese women following surgery. In order to overcome this complication, different management strategies are determined. The study demonstrates a new cutaneous plication technique which minimizes surgical wound infection incidence in obese women. With this method, wound complication rates in obese women are decreased and wound repair is similar to classical cutaneous plications.

STUDY DESIGN: The technique was conducted with one hundred obese women (n: 100) who had pfannenstiel incisions for any obstetrical and gynecological indications. All patients were evaluated on the postoperative 7th day and 6th week for wound repair.

RESULTS: There were only 3 cases with wound infections with this technique and all were detected within the first week following operation. Two patients with wound infections were also diabetic. Tissue approximation and wound repair were appropriate on the postoperative 7th day. There was not any wound dehiscence, hematoma, nor abscess formation at postoperative 6th week.

Key Words: Cutaneous suture, Wound repair, Obesity

Gynecol Obstet Reprod Med;16:1 (41-44)

Introduction

The growing obese population has become one of the major medical problems all over the world. Although, it is reported that there is no additional effect of obesity on wound dehiscence,¹ it is widely accepted that obesity and the thickness of subcutaneous adipose tissue are significant factors for wound infection and repair, hematoma formation and ventral herniation.^{2,3-4} Since, there is increased risk for wound complications in obese women, care is especially given to reduce these complications. Reduction in operation time, administration of prophylactic antibiotics, irrigation of operation site, adequate hemostasis, avoidance of dead space, and alternative surgical techniques are offered in order to reduce these complications.⁵ Since, wound complications are important surgical morbidities, identification and demonstration of new methods

to treat those complications is of great importance.

In this report, we introduce a new technique of cutaneous plication that is highly effective in reducing wound infection rates following pfannenstiel incisions in obese women.

Material and Method

The technique was conducted with one hundred obese women (n: 100) who had pfannenstiel incisions for any obstetrical and gynecological indications at Selcuk University, Faculty of Medicine, Obstetrics and Gynecology Department. The average age of the patients was 38.6 ±11.2. All the patients' body mass index was in the range of 30 to 40. 31 of the patients had cesarean section, and the other 69 patients had various gynecological operations. Out of those 69 operations, 43 were hysterectomy, 23 were myomectomy, and 3 were endometrioma extirpation operations. We excluded patients with prior pfannenstiel incisions.

All the cases in the study were electively performed and the patients were asked to have bath the night before the operation. The cases that had radical surgery due to malignancy and the cases where the operation time exceeded 120 minutes were not included in the study. The incision areas with high hair density were cleaned 30 minutes prior to the surgery. Subcutaneous tissue reapproximation was not performed

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Submitted for Publication: 03.01.2010

Accepted for Publication: 11.01.2010

alone or in combination with drain before cutaneous plication. The operation site was not irrigated in any case. Following the operation, all the patients were administered three doses of prophylactic antibiotherapy consisting of second generation cephalosporin. The incision site was kept closed for duration of 24 hours following the surgery and was cleansed after then. All patients were evaluated on the postoperative 7th day and 6th week for wound infections, repair, and complications.

Surgical Technique

Following the closure of the fascia, the hemostasis is achieved in the subcutaneous adipose tissue. The surrounding area of the incision site is cleansed with betadine solution and dried. 3/0 vicryl is used for the cutaneous plication. The aim of the technique is to put 3-4 separate subcutaneous sutures to the pfannenstiell incision site with 2-3 cm intervals. Therefore, an initial and separate suture is tied 2-3 cm away from one of the edges of the incision. On the superior segment of the incision site, the needle is inserted just below the dermis towards 0.5 cm medially in the subdermis (figure 1). The second step is to insert the needle from inner 0.5 cm of subcuticular tissue on the lower segment of the incision site and then to pass it towards outside just inferior to dermis (figure 2). In the final step, both edges of the suture are tied appropriately (figure 3). As a result, both upper and lower segments of the incision site come across and the knot is hidden subcutaneously. The other separate sutures are put 2-3 cm lateral to this initial suture.



Figure 1: The needle is inserted below the dermis towards 0.5 cm medially in the subdermis



Figure 2: The needle is inserted from inner side of subcuticular tissue on the lower segment of the incision and then passed through just inferior to dermis



Figure 3: Both edges of the suture are tied appropriately

Results

There were only 3 cases with wound infections under this technique and all were detected within the first week following operation. Two patients with wound infections were also diabetic. Tissue approximation and wound repair were appropriate on the postoperative 7th day.

The incisions of the three patients with detected wound infection were opened to ensure drainage and a sample was taken with a sterile ecuvion. The samples were sent to the lab, where anaerobic and aerobic cultures were produced. The bacteria in the samples where reproduction was detected were isolated, identified, and the antibiotic susceptibility tests were carried out. In cultures taken from the three cases that developed surgical site infections, two culture samples reproduced *E. coli*. For those two patients, who had hysterectomy operations, a new treatment protocol was organized according to their antibiotic susceptibility tests. In the incision culture of the last patient, who had a Cesarean section, no reproduction was detected. There were not any wound dehiscence, hematoma, and abscess formation at postoperative 6th week.

Discussion

Surgical site infections are one of the most important problems in surgery. They increase morbidity, mortality, hospital stay, and hospital costs. Incisionally-based surgical site infections (SSI) are estimated to account for 25-34 % of all nosocomial infections among surgical patients.⁶ It is estimated that 5-10% of surgical patients will develop a SSI.

One study reports that the incidence of hospital infections associated to surgical wounds was approximately 10% and that it leads to an additional cost of 1.8 billion dollars annually.⁷ Post-operative wound infections not only increase the cost

of treatment, but they can also result in scar formations and cause incisional hernia like sequelae due to wound separation.⁸ According to the data published by "National Nosocomial Infections Surveillance System (NNIS)", SSI comes third in all hospital originated infections (14-16%), and first among the cases who have undergone surgery (38%). These infections are classified into two categories; incisional and organ/space specific infections. Incisional infections are further divided as superficial and deep incisional infections. Statistically, two third (2/3) of the SSIs are incisional infections and one third (1/3) are organ/space infections.⁹

Development of such infections can be influenced by a lot of risk factors such as nutritional status, diabetes, smoking, altered immune response, length of preoperative hospital stay, skin antisepsis, preoperative shaving, duration of operation, antimicrobial prophylaxis, operating room ventilation, inadequate sterilization, the presence of foreign material in the surgical site, and surgical techniques.

The development of SSI's show that obesity increases the risk of infection, however, it is usually not possible for a preoperative patient to achieve weight loss. It has been reported that weight of 20% over the ideal weight increases the SSI and that there is a direct correlation between the thickness of the subcutaneous fat tissue in the abdominal wall and SSI development, also it is known that the thickness of the subcutaneous tissue is the biggest factor in the forming of wound infections.^{10,3} According to Pitkin Postoperatively, the most striking difference between the obese and non-obese groups was in the incidence of wound complications, with no significant difference in the occurrence of other disorders. The incidence of wound complications was 29 per cent with obesity, seven times that in patients of normal weight.¹¹ Another factor that is known to contribute to the development of infections in incision sites is the drains. Drains that are taken out of surgical incisions have been shown to increase infection rates. However, the infection rate in negative pressure and closed drains is lower. The bacterial colonization in drains that are left for a long time also causes infections.¹² There has not been a conclusive study on the risk effects of subcutaneous sutures on incision site infections; however, it is advised to keep as few foreign bodies as possible in the wound.

Excellent surgical technique is widely believed to reduce the risk of SSI. Such techniques include maintaining effective haemostasis while preserving adequate blood supply, preventing hypothermia, gently handling tissues, avoiding inadvertent entries into a hollow viscous, removing devitalized (e.g., necrotic or charred) tissues, using drains and suture material appropriately, eradicating dead space, and appropriately managing the postoperative incision.^{13,14,15} Development of surgical site infections is mainly dependent on type of micro-organism and patients' factors related to host resistance. The en-

dogenous flora of the patients' skin, mucous membranes, or hollow viscera is the main source of microorganisms responsible for surgical site infections.

The aim of the study was to apply the 3/0 vicryl separate subcutaneous sutures technique to the incision sites of the obese patients in order to reduce the risk of seroma, infection, wound dehiscence and to minimize the need for approximation of subcutaneous sutures and drain. To achieve its purpose, separate subcutaneous plications were applied to the incision sites of one hundred obese patients with pfannenstiel incisions for obstetrical and gynecological indications. The rate of superficial incision site infections in our patient group was found to be 3%, where 2% were also diabetic. Morrow et al. carried out various changes in the preoperative care, intraoperative techniques, and postoperative care and they observed 13% wound infection rate in obese gynecologic patients.¹⁶ Gallup et al., who improved Morrow's techniques, stated an infection rate of 3% in the infection rate in obese patients that were operated with the protocol.¹⁷

Surgical site infections are one of the most important problems in surgery. Although, it is not possible to improve all the factors related to the patient, almost all risk factors in the operative process can be improved. Therefore, determining all the risk factors that contribute to surgical site infection and taking the necessary measures would reduce the incidence of infection.

Obes Kadınlarda Pfannenstiel İnsizyon için Yeni Bir Alternatif Teknik; Kutanöz Plikasyon

AMAÇ: Cerrahi sonrası cerrahi yara yeri enfeksiyonları obez kadınlarda sıkça gözlenir. Bu komplikasyonun üstesinden gelebilmek için çeşitli yönetim stratejileri belirlenmiştir. Bu çalışma obez kadınlarda cerrahi yara enfeksiyonu görülme insidansını azaltan yeni bir kutanöz plikasyon tekniği sunmaktadır. Bu yöntemle, obez kadınlarda yara komplikasyon oranları azaltılmış olup yara onarımı klasik kutanöz plikasyona benzerdir.

GEREÇ VE YÖNTEMLER: Teknik herhangi bir jinekolojik ve obstetrik endikasyon için pfannenstiel insizyonu yapılmış 100 obez kadında uygulanmıştır (n: 100). Tüm hastalar ameliyat sonrası 7. gün ve 6. haftada yara iyileşmesi açısından değerlendirildi.

SONUÇLAR: Bu teknikle yara yeri enfeksiyonu gelişen sadece 3 olgu mevcut idi ve hepsi ameliyatı takip eden ilk haftada tespit edilmiştir. Yara enfeksiyonu olan iki hasta aynı zamanda da diyabetik idi. Doku yaklaşımı ve yara onarımı ameliyat sonrası 7. günde tamamlanmış idi. Ameliyat sonrası 6. haftada hiçbir hastada yara yeri ayrılması, hematoma, ya da abse oluşumu izlenmedi.

Anahtar Kelimeler: Kutanöz suture, Yara onarımı, Obezite

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