

## Cosmetic surgical repair of contaminated wounds versus traditional loose approximation: Does it increase the rate of wound infections?

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### Abstract

**Background:** The cosmetic result of the surgical scar has long been considered by surgeons as an important factor for patient satisfaction. On the other hand, there has been an old teaching that perfect closure of contaminated wounds increases the rate of infection. We decided to look into this matter and see if this is a fact or a myth.

**Methods:** In this prospective randomized study conducted on 200 patients with suppurative or gangrenous appendicitis, we closed the wounds with a cosmetic subcuticular suture of 4/0 nylon in 100 patients and in the other 100 patients the wound was approximated loosely with a few stitches of 3/0 nylon in vertical mattress fashion during a 14-month period.

**Results:** There was no significant difference in the rate of wound infection between these two groups.

**Conclusions:** This study shows that perfect closure of the wound with subcuticular closure, which gives a very good cosmetic result in comparison with traditional loose closure, does not increase the rate of wound infection.

**Keywords:** Appendectomy, Wound infection, Subcuticular suture, Vertical mattress suture.

### Introduction

Infection remains the most common complication after surgical procedures on

contaminated wounds [1,2,5,9,10]. There has been an old teaching that when we close the wound completely for better cosmetic results, the rate of infection increases, so most surgeons approximate the wound edges loosely and allow drainage

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from between the loosely placed sutures [3,4]. Since this technique gives poor cosmetic results from which most patients complain [6,7], we decided to perform a randomized prospective study to see if this old teaching is a fact or a myth.

### Methods

Over a period of 14-months between August 2005 and October 2006, 200 consecutive emergency appendectomies were performed at Shohada-e-Tajrish Medical Center. A unified surgical protocol was established. Appropriate fluid resuscitation was started on admission. Intravenous prophylactic antibiotics were given routinely just prior to the surgical procedure, in all patients with a diagnosis of acute appendicitis (one dose gentamycin sulfate (5 mg/kg/IV) and clindamycin (300-600 mg/IV), half an hour preoperatively).

A Mc-Burney incision was used. Appendectomy was performed with ligation and cauterization of the mucosal protrusion after stump ligation. The peritoneum and transversalis fascia were closed together in one layer with 3/0 chromic catgut sutures. Internal oblique and external oblique muscles each were approximated loosely with chromic catgut sutures. Before skin closure, the wound was irrigated copiously with warm saline solution.

Group I consisted of 100 patients aging from 8 to 41 years with a mean age of 21.3 years (77 males, and 23 females), in whom the skin was closed with subcuticular sutures of 4/0 nylon for better cosmetic results and in group II which consisted of 100 patients aging from 10 to 44 years with a mean age of 23.6 years, (84 males and 16 females) wound edges were approximated

loosely with a few stitches of 3/0 nylon with horizontal mattress technique to allow draining and the exposed fat was covered with gauze.

We did not use any drain in either group. Antibiotics were continued for at least 24 hours or until they became afebrile postoperatively in all suppurative or gangrenous appendicitis cases. The temperature was recorded daily and the wound examined in all patients with special attention to redness, edema, swelling and discharge from the wound.

Suppurated wounds were opened, the pus drained, and left open until the infection subsided and then closed secondarily with nylon. All patients were reviewed in the outpatient clinic at 1 week and 2 weeks after discharge.

### Results

In group I, acute appendicitis was found in 92 cases and in 8 cases the appendix was normal. The incidence of wound infection in group I was 4% (4 patients). Bacteriologic study in this group showed *Escherichia coli* and *Streptococcus fecalis* in the wound culture. Transient erythema and swelling of the surgical wound without discharge was noted in 10 patients, in none of whom any specific treatment was required.

In group II, acute appendicitis was found in 90 patients and in 10 cases the appendix was normal. In group II, the incidence of wound infection was 5% (5 patients). Bacteriologic study in this group showed *E. coli*, *Strep. fecalis* and *Staphylococcus aureus* in the wound culture. Transient erythema and swelling of surgical wound without discharge was noted in 7 patients and there was no need for antibiot-

ic treatment or drainage.

In both groups wound infection was noted 3 to 7 days after appendectomy. There was no significant difference between the two groups regard wound infection. It is noteworthy to say that the rate of infection following appendectomy reported in the literature is around 5% [1,8,11,12] and our infection rate overall was the same.

### Conclusion

Considering the result of this study there is no superiority in loose approximation of wound edges in decreasing the rate of wound infection over perfect closure, we can have better cosmetic results with exact approximation and perfect closure of the wounds and there was no increase in the rate of infection compared with traditional closure. We therefore recommend this type of closure for all clean and contaminated wounds.

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