

Tertiary wound closure for high-risk patients undergoing gynecological abdominal surgery

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Background/Synopsis

Surgical site infections (SSI) are associated with prolonged wound healing, additional procedural costs and a lower quality of life. Wound closure by secondary intention has been used to lower the risk of SSI in high-risk patients undergoing gynecological abdominal surgery. However, patients experience delayed wound closure, long-term disability and significant cost with secondary closure.

Objective/Purpose

The purpose of this study is to describe an alternative wound closure technique (tertiary closure) aimed at improving wound morbidity for high-risk patients undergoing gynecological abdominal surgery.

Methods

Patients undergoing gynecological abdominal surgery at high risk for developing a SSI were enrolled onto this protocol. Tertiary closure was performed using the following techniques:

1. Fascial closure with continuous double-stranded #1 triclosan impregnated polydioxanone suture
2. Approximation of subcutaneous tissue with interrupted 2-0 triclosan impregnated polyglycaprone suture
3. Placement of a subcuticular 2-0 triclosan impregnated polyglycaprone suture in a continuous fashion looping the suture every 6 to 8 cm through the skin securing with medium hemoclips leaving the skin open
4. Placement of a silver impregnated vacuum-assisted closure device over the incision at continuous 125 mm of subatmospheric pressure
5. Postoperative day four (POD #4): Removal of vacuum assisted closure device and approximation of skin edges via traction on the subcuticular suture, securing with hemoclips
6. Placement of a protective silver dressing over the incision for two weeks

Results

Eight consecutive patients undergoing gynecological surgery had tertiary closure of their abdominal incisions. The mean patient age and BMI were 51 and 28, respectively. Two patients had surgery for benign conditions and six for malignancy. Two wounds were clean contaminated, four of the wounds were contaminated and two were dirty/infected. The mean operative duration was 5.5 hours (4.0-8.5 hours) and the median length of stay was four days. All patients have been followed for at least 60 days since surgery (range 2-6 months). All wounds have remained closed since POD #4. No SSI, wound sinus tracts, wound seromas or incisional hernias have occurred.

Conclusions

Tertiary closure of high-risk abdominal wounds during gynecological surgery is safe and feasible. Tertiary closure may also be associated with a lower rate of SSI, re-admission, cost and superior cosmetic appearance compared to secondary closure. Based on our preliminary data, we have designed a larger trial comparing outcomes of tertiary closure to other closure methods for patients undergoing high risk gynecological abdominal surgery.