



Contents lists available at ScienceDirect

Asia-Pacific Journal of Sports Medicine, Arthroscopy, Rehabilitation and Technology

journal homepage: www.ap-smart.com

Technical Notes

Complication rate of different wound closures after primary hip arthroplasty - A survey of 373 patients

Yao Lu¹, Chengqiang Wang¹, Lijun Lin, Qingsong Qin, Qi Li*

Department of Orthopedics, Zhujiang Hospital, Southern Medical University, No. 253 Gongye Road, Guangzhou, 510282, China



ARTICLE INFO

Article history:

Received 28 June 2017

Received in revised form

5 November 2017

Accepted 6 November 2017

Available online 7 December 2017

Keywords:

Hip arthroplasty

Wound closure

Wound complications

ABSTRACT

Background: Wound closure is highly associated with wound complications and the best wound closure method was controversial in total hip arthroplasty.

Methods: We performed a retrospective study of primary hip arthroplasty and compared three types of closure method.

Results: 155 cases were closed using continuous subcuticular sutures then with staples, 111 using staples, 141 using interrupted sutures. 28 cases of wound complications occurred. Wound complication rates in subcuticular suture group, staple group and interrupted suture group were 1.9%, 11.7% and 8.5%, respectively ($p < 0.01$).

Conclusion: Wound complication rate was significantly lower when wound was closed with continuous subcuticular suture.

© 2017 Asia Pacific Knee, Arthroscopy and Sports Medicine Society. Published by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Wound complications, one of the major complications of hip arthroplasty, result in disrupted rehabilitation, prolonged hospital stay, increased costs, reduced satisfaction, and increased morbidity. Wound closure is highly associated with wound complications and may result in deep infection, which highlights the importance of closure technique.^{1,2} During the past decades, many wound closure techniques and materials have been available for orthopaedic surgeons. Among them, metal staples and sutures are the most commonly used skin closure methods in hip arthroplasty.³

Stainless steel has been widely used as a suture material since nineteen-forties.^{4,5} Compared to nylon sutures, metal staples can withstand high loads due to their mechanical strength and biocompatibility, which enables their use in tissues subjected to higher stress.^{6–8} Unlike nylon sutures, the superficial part of the staples seldom contacts the wound edge and do not cross the incision at its depth. Staples cause considerably less damage to wound defenses and reduce immune response. Staples are also believed to be faster than sutures both on closure and removal.^{9–11}

According to Moore et al.,¹² closing with staples could save an average nine point 6 min. Thus, surgeons are more satisfied with staples than sutures due to time saving benefits, especially after a long operation. However, although cost-effectiveness study showed staples may reduce theatre time and ease of removal, they are generally regarded as much more expensive than sutures.^{13,14} Moreover, there're no significant different of patient's satisfaction and wound cosmesis.¹³ Some studies reported the removal of staples can be uncomfortable and more painful for patients than sutures.^{15–18}

Interrupted nylon sutures are the most traditional and commonly used sutures. This method allows selective adjustments of wound edges but may increase immune response due to crossing dermis in depth.¹⁹ Development of absorbable sutures promotes the popularity of subcuticular suturing technique. Absorbable sutures are defined as degradable and absorbable sutures in tissues. Vicryl, for example, a widely used absorbable suture made of polyglactic, is extremely useful as a subcuticular suture to approximate wound edges until the wound has gained enough strength preventing wound dehiscence.²⁰ The inflammatory response decreases due to the absorption of polyglactic acid by hydrolysis.¹⁹ Furthermore, subcuticular suturing technique has many benefits. It provides an excellent way to achieve accurate skin edge apposition without external sutures or cross-hatching, resulting in little tissue reaction, rapid reduction and absence of mark points.²¹ The

* Corresponding author.

E-mail address: qili565@foxmail.com (Q. Li).

¹ Yao Lu and Chengqiang Wang contributed equally to this work.

main disadvantage of this method is that wound closure with subcuticular suture requires a longer operative time.²² Subcuticular suture also requires a higher suturing skill of surgeons.

Nevertheless, as to wound complications, current studies showed no clinical evidence on which closure technique is superior to the other.²³ A meta-analysis was performed to compare the use of staples and sutures in orthopaedic surgery.²⁴ It suggested staple closure was three times risky in developing a postoperative infection than suture closure so staple closure should be reconsidered. While another recent published meta-analysis²⁵ reported there was no difference in infection comparing staples with sutures in joint surgery. The reason why results differ may be because the infection rate of primary joint arthroplasty is very low (1.5%–2.5%) while the sample scale of most previous studies is relatively small.²⁶ Thus, we present a retrospective review of 405 patients who underwent hip arthroplasty surgery during 2013–2015 in our department. The purpose was to compare the wound complications followed with three different closure methods in patients undergoing primary hip arthroplasty.

Patients and methods

This study was approved by the ethics committee of Zhujiang Hospital, Southern Medical University (No. 2016-GKZX-002). Patients who underwent joint arthroplasty surgery from January 2013 to December 2015 at our department were searched. Patients admitted for primary hip arthroplasty were included. Exclusion criteria were hip revision, a previous incision in the operative field, underlying malignancy and died within one month after primary surgery.

Surgical procedure

All surgeries were performed by senior surgeons with specialist registry. Surgical procedure, closure technique and wound care were performed without knowledge that the patients and their outcomes would be included in a study. In all cases, fascia was closed with 1–0 vicryl suture (Ethicon) and subsequent layers deep to the dermis were closed with nylon sutures. Skin was closed with continuous subcuticular 4-0 vicryl suture (Ethicon), staples (Mani) or interrupted nylon sutures. Staples were also used in subcuticular suture group due to adhesive skin closure strip was not available at our department. Selection for wound closure was based mainly on treating surgeons' routinely used.

Postoperative management

All wounds were dressed with cotton dressing. Wound dressings were changed every two days postoperatively. Drains were removed after one day postoperatively. Standard protocol of postoperative interventions at our department including postoperative usage of antibiotics for 24 h, deep vein thrombosis prophylaxis and rehabilitation were undertaken for each set of patients. Patients had a routine follow-up at the thirtieth days postoperatively, including wound inspection and radiographic evaluation.

Clinical assessment

All data were collected from the electric records. Preoperative history and basic physical data, including age, gender, body mass index (BMI), diagnosis and previous other joint surgery, were collected. Surgical procedures, type of skin closure technique were evaluated according to the operative reports. Operative and postoperative hospital information including wound characteristics, wound care, removal of staples or sutures and postoperative

hospital stay time were collected.

Statistical analysis

Data was analyzed using SPSS 19.0 (IBM). The Kruskal-Wallis test was used to compare the continuous variables. Pearson's chi-squared test was used to analyze the rates among three groups and the association between two variables. The partition of chi-squared method was used to make pair wise comparisons between groups where an overall significant difference was found. The Fisher's exact test was used otherwise. For partitions of chi-squared method, significance was set at $p \leq 0.0125$. For the rest of the analyses, significance was set at $p \leq 0.05$.

Results

Surgery type and closure method

In the study, 405 patients and 440 consecutive cases of primary hip arthroplasty were reviewed. However, 33 cases were excluded: 14 patients received hip revision, four patients died within one month after primary surgery due to heart failure, 12 patients had previous operation in the operative field, and two patients had malignancy. Thus, 373 patients and 407 cases were included finally. 287 (70.5%) procedures underwent total hip arthroplasty (THA) and 120 (29.5%) procedures underwent hemiarthroplasty (Table 1). 155 (38.1%) procedures were closed using continuous subcuticular sutures then with staples, 111 (27.3%) using staples, and 141 (34.6%) using interrupted sutures.

Patient characteristics

Baseline characteristics of patients were shown in Table 2. Average patient age was 64.1 (range, 18–99) years. Average body mass index was 24.0 (range, 11.9–31.7) kg/m². They were similar among three groups and no significant difference was found. For the surgery procedures, average operation time was 120.9 (range, 30–385) min. Average operative blood loss was 260.7 (range, 50–1200) mL and average blood transfusion during perioperative period was 308.9 (range, 0–1350) mL.

Wound complications

Postoperative wound complications occurred in 28 cases (6.4%) including ten wound discharges, 12 wound redness, one wound dehiscence, two superficial infections and two deep infections (Table 3). Wound complication rates in subcuticular suture group, staple group and interrupted suture group were 1.9%, 11.7% and 8.5%, respectively. There was a statistically difference among three groups ($p = 0.005$). Further pair wise comparisons showed that complication rate was significant lower in subcuticular group. P values of subcuticular suture group versus staple group and subcuticular suture group versus interrupted suture group were 0.001 and 0.010, respectively. There was no significant difference when compared complication rates between staple group and interrupted suture group ($p = 0.45$).

We also analyzed the association of the comorbidity and the wound complication (Table 4). In patients with renal disease, the wound complication rate was higher but without significant difference ($p = 0.17$).

Discussion

Overall, our study had reviewed three different methods of wound closure in 407 consecutive cases of primary hip arthroplasty

Download English Version:

<https://daneshyari.com/en/article/8608059>

Download Persian Version:

<https://daneshyari.com/article/8608059>

[Daneshyari.com](https://daneshyari.com)