

Total Knee Replacement Subsequent to Severe Necrotising Fasciitis of the Lower Limb

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Summary

The incidence of wound related complication following total knee arthroplasty is as high as 10%-20%. To perform total knee arthroplasty in a knee with extensive scarring around the knee can be a challenging task. We report a case of 55-year-old diabetic woman, who had total knee arthroplasty, performed two years after she had recovered from necrotizing fasciitis around the right knee. Understanding the vascular anatomy around the knee is of paramount importance in the planning of skin incision to ensure fewer wound related complications.

Key Words: Total Knee Replacement, Necrotising Fasciitis

Introduction

Osteoarthritis is a slowly progressive degenerative disease of joint which can induce pain and functional impairment. At present, the therapy for osteoarthritis combines non-pharmacological and pharmacological treatment aimed at symptomatic relief. Surgery should be considered only after adequate trials of conservative therapy, including physical therapy, anti-inflammatory medication, and modification of daily activities.

Necrotizing fasciitis is a life threatening infection involving the fascia and subcutaneous tissue. Even if treated early and aggressively, necrotizing fasciitis has a 30% to 40% mortality rate. Early presentation and diagnosis, supportive measures, broad spectrum antibiotics, prompt and aggressive surgical debridement remain the cornerstone of management.

Case Report

LFY, a 55-year-old Chinese lady, who was a diabetic and suffering from bilateral knee pain for three years, presented with multiple discharging sinuses over the

right thigh one week after seeking acupuncture treatment. She was diagnosed as having necrotizing fasciitis of the right thigh for which debridement was performed three times, together with antibiotic treatment. Methicillin sensitive *Staphylococcus aureus* was isolated from the wound tissue.

After the last debridement, there were two wounds. One situated at the lateral aspect of the thigh was an elongated wound, measuring 30cm x 8cm, extending from the level of the greater trochanter to the level of the tip of the head of fibula, exposing almost the entire length of the underlying vastus lateralis and the lateral aspect of the knee (Figure 1). The medial aspect of the thigh had a wound situated distally extending from mid thigh to the level of the upper pole of the patella, with a dimension of 13cm x 8cm. The surviving skin with its subcutaneous tissue, bridging the two wounds, overlying the anterior aspect of the thigh was undermined during the debridement. Subsequently, the wounds were covered with split thickness skin graft which healed satisfactorily. Despite the severe osteoarthritis of her knees, athroplasty was deferred for fear of wound related complications.

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Two years later, right total knee replacement was performed using a mid line skin incision. The wound healed uneventfully (Figure 2). Eight months later, she underwent left knee total arthroplasty. Preoperatively, she had American Knee Society Clinical Rating Score of 59 and functional score of 55. One year after the right knee arthroplasty, her knee score improved to 75 and functional score to 80. Thus far, two years post operation, there have been no surgical complications.

Discussion

The common complications of total knee arthroplasty include wound related complications, infection, loosening, thromboembolism, arthrofibrosis, periprosthetic fracture, extensor mechanism dysfunction, and neurovascular injuries. The incidence of wound related complications following primary or revision total knee arthroplasty is reported as high as 10%-20%¹. Types of wound related problems include delayed wound healing, prolonged or persistent wound drainage, haematoma, superficial infection and skin necrosis.

The important local factors for developing wound related complication following total knee arthroplasty are skin that is compromised by burn, irradiation, prior wound healing problem, and most importantly prior knee skin incisions². Patient factors that complicate the wound healing are cigarette smoking, long term steroid usage, morbid obesity, diabetes mellitus, malnutrition and severe anemia.



Fig 1: Wound on lateral aspect high thigh exposing vastus lateralis muscle after debridement

Treatment of our patient's necrotizing fasciitis resulted in thin skin and scar tissue around the knee joint. Performing a new surgical approach in the presence of preexisting incisions can potentially compromise the dermal circulation. We were worried that the incision for the knee arthroplasty would not heal well, possibly exposing the prosthesis subsequently.

Preoperatively, good blood sugar control was confirmed. The patient was taught to monitor and control her diabetes whilst awaiting surgery. She was admitted three days prior to operation to optimize her blood sugar control.

For the previously operated knee, it is recommended to place the incision at or near the midline³. With the understanding of the arterial supply around the knee, we used midline skin incision. Gentle tissue handling was very much emphasized throughout the procedure.

Another approach to the problem would be a prophylactic muscle flap, preferably gastrocnemius muscle flap. One danger of this approach is the risk of flap necrosis due to poor circulation in the particular patient. Alternatively a tissue expander could have been used to increase the area of good skin available to cover her wound. This might have been preferable to the disfigurement arising from raising a pedicle flap.

In conclusion, previous soft tissue infection with extensive scarring in a diabetic patient is not an



Fig 2: Two years after right total knee arthroplasty. The patient has a good functional outcome.

CASE REPORT

absolute contra-indication for total knee replacement. With the understanding of local blood circulatory pattern, gentle handling of soft tissue and optimization

of systemic conditions, we may be able to achieve favorable surgical and functional outcome in patients with severe osteoarthritis.

References

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