



# Yersinia Enterocolita Periprosthetic Hip Joint Replacement Infection; Case Report

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## Abstract

Prosthetic joint infection is devastating for both patients and surgeons alike. We present a case of prosthetic hip joint infection secondary to an extremely rare causative organism; *Yersinia Enterocolitica*. The prosthetic infection as well as the systemic upset caused had a life-threatening impact upon the patient. Multidisciplinary team working between the physicians and orthopedic surgeons ultimately yielded a positive outcome.

**Keywords:** Arthroplasty; *Yersinia Enterocolitica*; Hip joint

## Introduction

Joint replacement revision surgery represents significant workload to the National Health Service. From the start of April 2003 to the end of December 2015, there have been 88,822 revision hip replacement operations and 54,153 revision knee replacement operations performed [4]. Periprosthetic joint infection represents a significant cause for revision surgery; for the above time period 7,133 hip revisions and 7,591 knee revisions were performed due to infection [5]. The vast majority of joint replacement revision surgery when performed for infection is performed as a two stage procedure. We present a case of periprosthetic joint infection requiring two-stage revision due to an extremely rare causative micro-organism. This case is important as it highlights the use of specific antimicrobial therapy towards the extremely rare causative micro-organism therefore giving a markedly decreased rate of mortality. Both physicians and orthopedic surgeons need to be aware of this; should this micro-organism cause infection in one of their arthroplasty patients, prompt correct antimicrobial treatment is required as that patient is at significantly increased risk of mortality.

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**Received Date:** 11 Jan 2019

**Accepted Date:** 06 Feb 2019

**Published Date:** 09 Feb 2019

### Citation:

Clarke AD. *Yersinia Enterocolita* Periprosthetic Hip Joint Replacement Infection; Case Report. *Clin Surg.* 2019; 4: 2330.

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## Case Presentation

A seventy-eight year old retired farmer was admitted overnight complaining of several days of worsening groin pain. Background medical history included obesity with BMI 36 and alcohol excess. He had undergone un-cemented Furlong total hip replacement over ten years previously for osteoarthritis with no intervening problems to the hip. He was febrile at 38.8°C with raised inflammatory markers including CRP >300; periprosthetic joint infection causing sepsis was therefore suspected.

The patient was given IV flucloxacillin as per local prosthetic joint infection policy before undergoing operative management on a scheduled operating list the next day. Hip aspiration yielded 5mls of pus; formal open washout subsequently gave 20 mls to 30 mls of pus from the hip capsule. The implant was noted to be stable. Five tissue samples and one fluid sample were sent for microscopy culture and sensitivity, white cell count and cell differential. Hydrogen peroxide wash and copious saline lavage was performed, with the head of the femoral stem exchanged. Flucloxacillin was continued with tazocin added.

All microbiology samples demonstrated moderate to heavy growths of *Yersinia enterocolitica*. The fluids culture gave gram-negative rods, with a white cell count of 180,000×10<sup>6</sup>/L of which 100% were polymorphs. Admission blood cultures showed gram negative rods with *Yersinia enterocolitica* isolated. Treatment with ciprofloxacin IV was advised.

An abdominal CT scan was performed to try and identify a cause of the hip infection. This demonstrated no obvious bowel source and no obvious general surgical pathology. Over the following days the patient developed abdominal distension with no bowel output. Further CT scans showed large and small bowel distension which was diagnosed as acute pseudo-obstruction

secondary to septic arthritis. The surgical team performed colonoscopy decompression finding no obstructing lesion. Thereafter the patient had recurrent Diarrhoea although no infective cause was isolated.

Despite initial improvement systemically, further sepsis was subsequently noted. Two days of gentamicin were given but the patient remained grossly unwell therefore IV tazocin was commenced. The wound dressings were soaked with the skin surrounding the hip wound indurate and mildly erythematous. Further open washout was performed at one week following initial debridement with substantial amounts of purulent fluid noted with unhealthy tissue down to the hip joint. Topical negative pressure drains were placed with continuation of IV tazocin.

Thereafter the patient initially systemically improved; the CRP decreased to 66 whilst remaining on tazocin. However the wound continued to ooze, CRP remained approximately 60 and the patient experienced a further fever. To optimise outcome giving the best possible chance of infection eradication and return to function a two-stage hip revision was planned. Tazocin was continued until after the first stage revision.

First stage revision with cement spacer was completed with tissue samples showing no growth on direct and enrichment cultures. Consultant microbiology advice detailed changing tazocin to ciprofloxacin for a further three weeks before being discontinued. At further clinic review, the wound was noted as dry with a CRP of 13. Check X-ray was satisfactory with second stage revision surgery to be planned.

## Conclusion

Literature review demonstrates that *Yersinia enterocolitica* is an extremely rare cause of prosthetic joint infection having previously been reported only once as causative organism for prosthetic hip joint infection [2]. Both this and the previous case were in gentlemen who had undergone hip replacement 10 or more years previously.

The most common mode of entry of *Yersinia enterocolitica* is ingestion of contaminated or inadequately cooked pork [1]. Haematogenous spread of this bacteria from the gastrointestinal tract to a prosthetic joint is the likely mechanism of pathogenesis.

This can give late onset prosthetic infection with acute systemic upset [3]. This most commonly occurs in patients with co-morbidity including diabetes mellitus and/or liver disorder [2]. Other cases of *Yersinia* have demonstrated progressive abdominal pain and febrile event where abdominal imaging showed ileus [3]. Whilst the patient described in this report is not known to be diabetic or have a liver disorder, his co-morbidities included high BMI and alcohol excess. This raises the possibility of undiagnosed type two diabetes and liver disease. This gentleman also suffered abdominal distension and an episode of no bowel output prompting general surgical investigation. This mirrors a previous case described in the literature.

Treatment of *Yersinia enterocolitica* has evolved during the late 20<sup>th</sup> century giving a mortality rate of 7.5% during the late 1980s as compared to over 50% from before the 1970s. This is attributed to treatment including ciprofloxacin as *Yersinia* produces beta-lactamases which are resistant to penicillin and first generation cephalosporins [1]. Removal of the infected prosthesis is also advised as bacterial biofilm on the prosthetic surface could prevent eradication of the pathogen [3].

This case demonstrates how effective team working within the multidisciplinary team ultimately gave a positive outcome for the patient. Without timely intervention and targeted anti-microbial therapy, the outcome could have been very different.

## References

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