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## Case Report

# Coloarticular Fistula: A Rare but Potentially Fatal Complication

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### ABSTRACT

**Introduction:** Coloarticular fistula is a very rare entity and is a potential complication after total hip arthroplasty. Discussions surrounding coloarticular fistulas is presented mainly as case reports in the literature.

**Case:** A 66-year-old Caucasian female evaluated at our institution for left hip pain and weakness. Radiologic evaluation showed periprosthetic infection with further discovery of air in the hip joint. Abdominal exploration by general surgery did not show any intraoperative findings concerning for coloarticular fistula. Diagnosis of coloarticular fistula was later made with a gastrograffin enema study following negative findings from MRI of pelvis with contrast. She was treated with distal transverse colectomy. The patient had a difficult post-operative course with sepsis and multi-organ failure that resulted in death.

**Conclusion:** Coloarticular fistula is a rare complication of hip arthroplasty and is associated with high morbidity and mortality rates. This complication should be taken into consideration during evaluation of hip joint infections in patients with history of hip arthroplasty. Despite prompt diagnosis and treatment final outcome may be fatal.

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## Introduction

Coloarticular fistula is a very rare complication and is often found as case reports in literature. It is described most commonly in association with a hip joint surgery or complicated diverticular disease of distal colon, inflammatory bowel disease, prolonged steroid use, and pelvic irradiation for malignancy. Though rare, coloarticular fistulas are the most common type of gastrointestinal tract complications following hip arthroplasty [1]. It can be associated with high mortality rates, especially in the absence of prompt diagnosis and treatment. In this case report, we describe our experience with a patient with coloarticular fistula which presented as periprosthetic infection of the hip joint and resulted in fatal outcome despite timely and appropriate intervention.

## Case Presentation

A 66-year-old Caucasian female with history of multiple bilateral total hip arthroplasty, Sjogren syndrome, ankylosing spondylitis, rheumatoid

arthritis, osteoarthritis, and chronic steroid use (prednisone for 10 years) presented and was evaluated for a chief complain of weakness and pain of her left leg. The patient had an extensive past surgical history including; exploratory laparotomy for colonic perforation with sepsis and colostomy, colostomy reversal, appendectomy, cholecystectomy, and hysterectomy. She presented to our facility as a transfer from an outside hospital. On presentation, she was afebrile and hemodynamically stable. Her physical exam showed left extremity immobility due to pain and tenderness of left hip. In terms of laboratory results, complete blood count revealed leukocytosis with neutrophilia, anemia, and thrombocytosis. Initial radiologic evaluation included plain X-ray of the left hip and knee that demonstrated air/gas collection overlying the left total arthroplasty suspicious for a periprosthetic infection of left total hip arthroplasty. Differential diagnosis considered at this point included periprosthetic infection or osteomyelitis of left hip joint.

The patient was taken to operating room by orthopedic surgery for hardware removal, irrigation, and debridement. Intraoperatively, while

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valsava maneuver was performed, the team observed bubbles welling into the joint space from the retroperitoneum. Differential diagnoses at that time included coloarticular fistula and/or necrotizing soft tissue infection. General surgery was consulted intra operatively. The general surgery team performed exploratory laparotomy with lysis of adhesions. However, there was no gross evidence of coloarticular fistula or a necrotizing soft tissue infection during the operation. Broad spectrum antibiotics with Metronidazole and Vancomycin was initiated along with infectious disease consult. Additionally, Colorectal surgery was consulted to rule out a coloarticular fistula.

On radiological evaluation, MRI of the abdomen and pelvis with contrast did not reveal coloarticular fistula. Subsequently, Gastrograffin Enema was performed, and it showed a sigmoidoarticular fistula to the left hip joint. The patient was taken back to the operating room by the colorectal surgery for re-exploration and possible sigmoid colon resection. Intraoperatively, extensive adhesiolysis was required due to dense intra-abdominal adhesions. Sigmoid colon was difficult to visualize due to extensive adhesions and loss of surgical planes. As a result, a distal transverse diversion colostomy was performed.

The patient had a very turbulent and protracted post-operative course. She had an episode of hypoxia following extubation which required re-intubation and subsequently transfer to the Intensive Care Unit. The patient developed sepsis which ultimately progressed to septic shock. The patient's condition remained critical following surgery and continued to deteriorate resulting in multisystem failure. After multiple discussions with the family of the patient, they decided to withdraw care as per her living will wishes. Patient expired on hospital day 14 due to sepsis and its associated complications.

## Discussion

Fistula formation between colon and hip joint can be a catastrophic complication following hip surgery in patients who have associated risk factors and comorbidities. There have been key case reports in the literature that discussed coloarticular fistulas with most of these reports acknowledging the significant morbidity and mortality associated with this diagnosis. Predisposing factors of post-operative fistula formation are similar to those seen in different type of fistulas, including fistulization due to diverticulitis, Crohn's disease, chronic steroid use, and pelvic radiation or malignancy [2-5]. In our case report, the history of prior multiple hip arthroplasties and chronic steroid use were the main factors that contributed to the development of a coloarticular fistula. Prior case reports proposed that soft tissue atrophy and delayed wound healing are possible mechanisms involved in the pathogenesis of coloarticular fistula, especially in patients with underlying inflammatory conditions like rheumatoid arthritis [5].

Multiple previous studies described entero-articular fistula formation as a potential complication of hip arthroplasty. Levin *et al.* described a fistula formation between the sigmoid colon and left hip following hip arthroplasty in a patient with history of low anterior resection followed by adjuvant chemotherapy and radiation therapy [4]. Additionally, Kumar and Jowett discussed a case of a fistula that formed between the cecum and hip joint in a patient following displacement of the nail used during hip arthroplasty into the pelvic cavity [6]. Furthermore, Bach *et*

al. described fistula formation between the rectum and hip joint in a patient following migration of hip arthroplasty into the pelvis [7].

What is unique about our case is that, despite the fact that air bubbles were detected in the posterior bed of the hip joint during irrigation and debridement, no fistula was detected on gross exploration and/or pelvic MRI with contrast. A gastrograffin enema study was required to confirm the diagnosis in our patient. This is an imaging modality with fading utility in current clinical practice due to presence of more advanced radiologic imaging modalities. Our case emphasizes the importance of utilizing a simple diagnostic study like contrast enema in diagnosing coloarticular fistulas, especially when standard imaging yields inconclusive results in the setting of high clinical suspicion.

Based on literature review and up to our knowledge, there is currently no study that describes the use of gastrograffin in the diagnosis of coloarticular or colocutaneous fistula. Most of the case reports on this topic describe the use of CT and/or MRI to establish the diagnosis. Additional observation in our case report is that our patient did not have radiologic or surgically detected displacement of her hip prosthesis that could have precipitated fistula formation, as described in some of the studies stated above. Finally, our patient did not have additional significant risk factors that increase the chance of fistula formation including diverticular disease and inflammatory bowel disease [8].

Up to date, there is no consensus on the appropriate management of Coloarticular fistula. The literature supports that management is mainly dependent on the patient's clinical status, hemodynamic stability, and presence of other comorbid conditions that impact clinical course. One study described the use of non-operative management with broad spectrum antibiotics [4, 6]. Most case reports recommended a multidisciplinary approach involving orthopedic surgery, general surgery, colorectal surgery, and infectious disease as seen in our case. Majority of the studies described in our discussion recommended the use of surgical washouts along with hip prosthesis removal, colon resection, and antibiotic in the management of patients [2, 5, 9].



Finally, our patient did not have a good outcome despite prompt diagnosis and treatment. This is an interesting case that emphasizes the importance of having a high index of suspicion in patients with known risk factors for coloarticular fistula and managing them appropriately in order to improve outcomes. Our case report underscores the importance of early diagnosis with the appropriate imaging modality and also quick intervention. Despite doing all the right things in terms of appropriate

diagnosis and treatment, our case study demonstrates that mortality from coloarticular fistula is still very high.

### Conflicts of Interest

None.

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