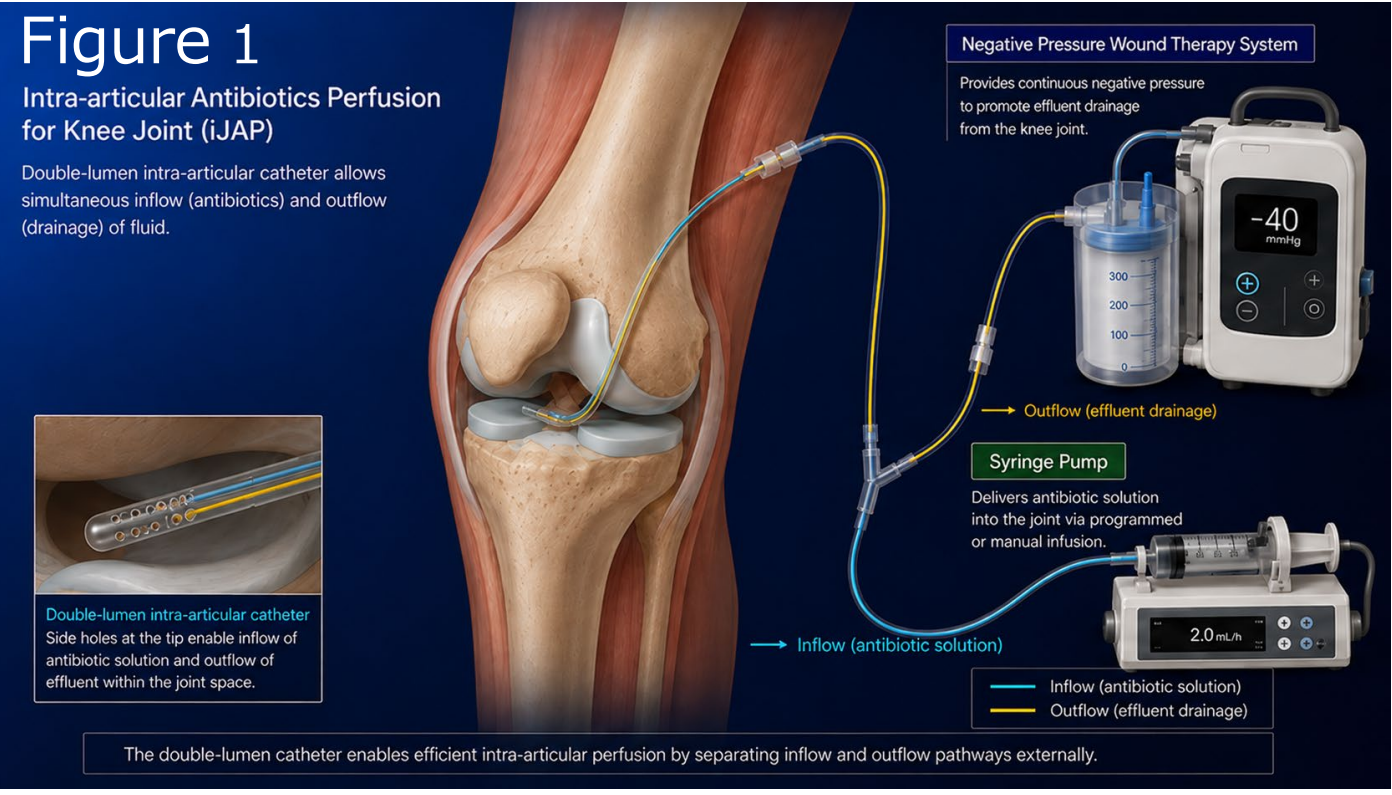


INTRODUCTION

- **Periprosthetic joint infection (PJI)** after total elbow arthroplasty (TEA) is uncommon but difficult to treat, especially when component loosening is present.
- A thin soft-tissue envelope, limited bone stock, and biofilm formation on implant surfaces make management challenging [1, 2].
- **Continuous local antibiotic perfusion (CLAP)** delivers high-concentration antibiotics directly to the infected site while draining the dead space with negative-pressure wound therapy (NPWT) [3, 4].(Fig. 1)
- CLAP has shown promise in other implant-related infections, but had **not previously been reported for TEA**.

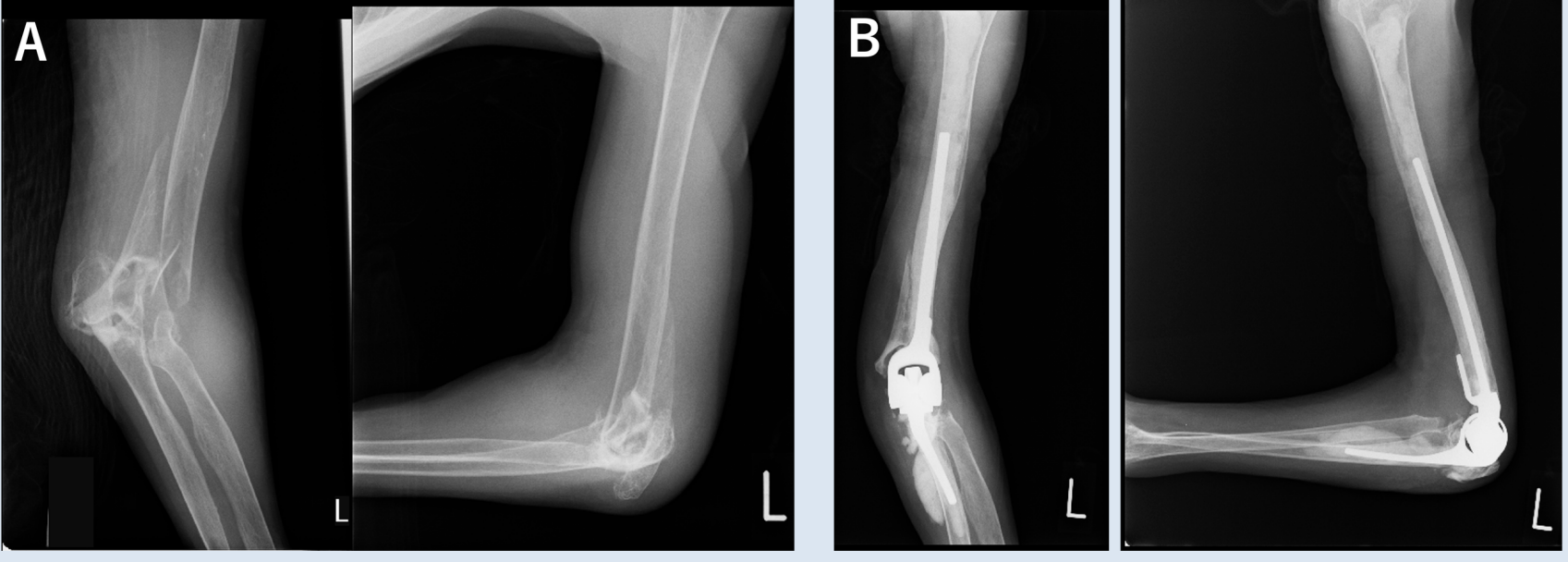


CASE PRESENTATION

Patient History:

- ◆ ≈40 years of ongoing care for rheumatoid arthritis; supracondylar humerus fracture 9 years before admission, treated with total elbow arthroplasty (Fig. 2A–B).

Figure 2. (A) Fracture prior to TEA. (B) Periprosthetic fracture line.



- ◆ Pain-free with preserved activities of daily living afterward.
- ◆ 1 year before admission: gradual onset of elbow pain. 4 months before admission: a periprosthetic fracture line was noted; revision was declined and splint immobilization was used.
- ◆ Medication: peficitinib 100 mg/day, PSL 1 mg/day, MTX 6 mg/w

Clinical Presentation:

- ◆ Admitted with fever, worsening elbow pain and swelling, and purulent discharge from the posterior elbow (Fig. 3A).
- ◆ Erythematous, swollen elbow with markedly restricted range of motion.

Laboratory & Imaging:

- ◆ WBC 15,800 / μ L, CRP 8.18 mg/dL at admission.
- ◆ Radiographs: soft-tissue swelling, peri-implant osteolysis, periprosthetic fracture line (Fig. 3B).
- ◆ MRI: joint effusion(Fig. 3C). Aspiration: bloody purulent fluid; culture grew multiple organisms, considered likely contaminated.

Figure 3. (A) Purulent aspirate. (B) Osteolysis/fracture line. (C) MRI.



Diagnosis:

- A sinus tract communicating with the prosthesis, together with purulent discharge, satisfied the **2018 International Consensus Meeting criteria** for PJI.[5] Cefazolin was started empirically before surgery.

MANAGEMENT

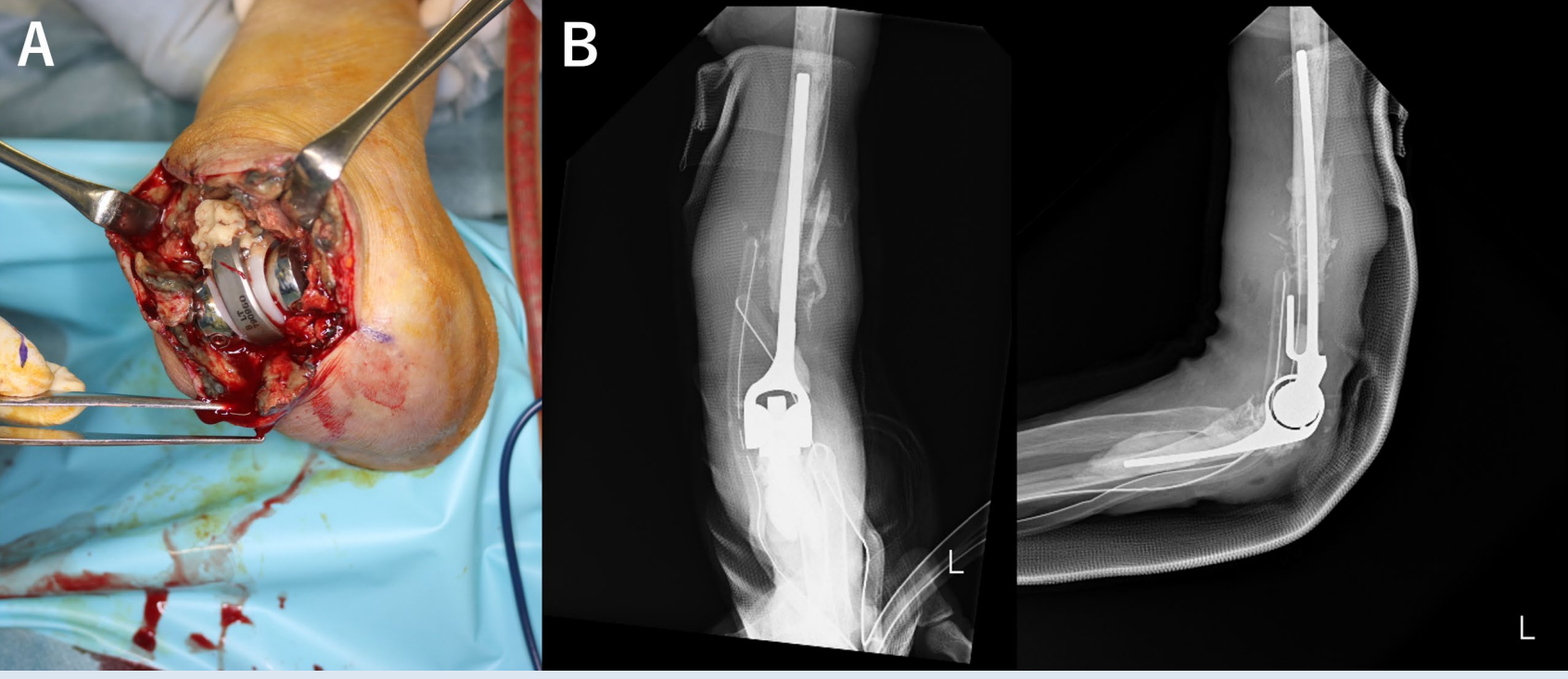
Surgical Debridement:

- ◆ Posterior approach centered on the sinus tract; tract excised, necrotic tissue and infected bone fragments thoroughly debrided, followed by extensive irrigation (Fig. 4A).
- ◆ Mild loosening of the humeral stem was noted intraoperatively.
- Revision TEA was judged excessively invasive for this elderly, frail patient with rheumatoid arthritis — **implant retained, no component exchange performed** (Fig. 4B).

CLAP Therapy Protocol:

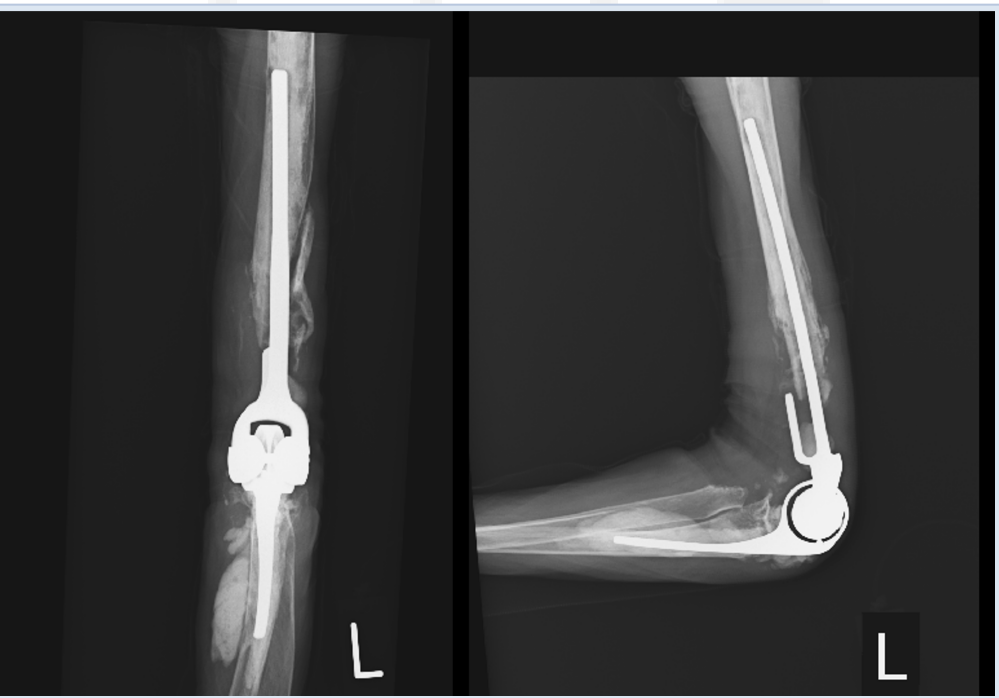
- Two Salem sump tubes placed in the periprosthetic space; **gentamicin 1,200 μ g/mL at 2 mL/h**, with continuous NPWT at **−40 mmHg for 14 days**.
- ◆ Culture identified **methicillin-susceptible Staphylococcus epidermidis**. ➤ Antibiotics de-escalated to cefazolin, then oral cephalixin.

Figure 4. (A) Intraoperative debridement. (B) Postop radiograph with tubes.



OUTCOME AT 3 YEARS

Figure 5. Radiographs at 3-year follow-up: no progression of stem loosening.



- ◆ No clinical or radiographic recurrence of infection; no progression of humeral stem loosening (Fig. 5).
- ◆ Elbow motion preserved: -50° extension to 140° flexion.
- ◆ Independent eating and upper-limb activities of daily living. No nephro- or ototoxicity from CLAP was observed.

DISCUSSION

- First reported use of **CLAP therapy for TEA-related PJI**.
- Implant loosening is classically unfavorable for DAIR, reflecting possible bone–implant bacterial involvement [6, 7].
- In a frail patient with rheumatoid arthritis, revision TEA carried substantial functional risk [6–8] - **CLAP-assisted DAIR offered a pragmatic salvage option**.
- Outcome reflects a multimodal strategy (debridement + CLAP + antimicrobials + rheumatologic management); CLAP's independent contribution cannot be isolated from a single case.

CONCLUSION

- ✓ **CLAP-assisted DAIR** may be a feasible **salvage strategy** for TEA-related PJI with mild stem loosening — enabling **infection control** while preserving the implant and elbow function.

References

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