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Letter to the Editor

A valuable technique for femoral stem revision in total hip replacement: The in-cement revision – A case series and technical note

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A B S T R A C T

Revision of a cemented femoral stem can be a challenging procedure. We present a series of cases utilising the "In-cement" revision, whereby the same size stem is introduced into the original cement mantle, without additional cementing. It requires a stable cement mantle in the correct version.

We describe the technique and present a review of 23 revision total hip replacements performed over a 5 year period. At average follow-up of 67 months (12–128 months), the overall survivorship was 91.3% with no patient requiring re-revision for stem loosening or mechanical failure. Two patients required re-revision for infection and one of those patients is now deceased. No further operations were required in 21 patients.

The "In-cement" revision can be a valuable technique for the revision arthroplasty surgeon. Early results suggest this is a safe and effective technique in the appropriate patient.

1. Introduction

Revision of a cemented femoral stem can be a challenging procedure. Removing the cement mantle requires time and patience with a risk of further bone damage and possible fracture.[1–4] Retention of the old cement mantle and insertion of a smaller or shorter stem – the cement–in-cement revision – described for taper stems – provides a good alternative if the cement mantle is stable, but is limited if a smaller size or offset stem is already in situ. We present a newly described technique, the "In-cement" revision – the introduction of a stem, the same size as the original implant, into the previous cement mantle, without additional cement or downsizing. This has not been previously described or investigated in the literature. We present the technique and a series of 23 cases.

In-cement revision requires an intact and stable cement mantle in the correct version. The benefits include improved view of the acetabulum, time efficiency, the ability to use the same size stem and utilisation of the previous distal centralised spacer plug to facilitate subsidence.

2. Technique

After either general or spinal anaesthetic, the patient is positioned laterally. An incision is made through the previous scar and the hip is exposed through a posterior approach. After appropriate dissection and debridement, the hip is dislocated, the head tapped off and the cemented, polished, tapered stem is removed (Fig. 1).

There are three primary keys in the technique:

1. Inspection of the cement mantle for stability and version (Fig. 2).

   Inspect the cement mantle for cracks and coverage. Forceps or a pituitary rongeur are used to attempt to mobilise the cement and therefore determine if it is stable. Version is assessed and is deemed either appropriate or not appropriate. If the version of the previous stem is not appropriate or the cement mantle is not stable, an in-cement revision should not be pursued.
2. Protection of the cement mantle (Fig. 3).

   Place a moist swab in the canal to prevent debris from the acetabular revision dropping into the cement mantle.

   The acetabulum is then exposed and revised as appropriate.
3. Reinsertion of the same size stem without a centraliser (Fig. 4).

   No centraliser is used to facilitate subsidence. Tap in the stem until it re-engages with the taper. Double check the length of the

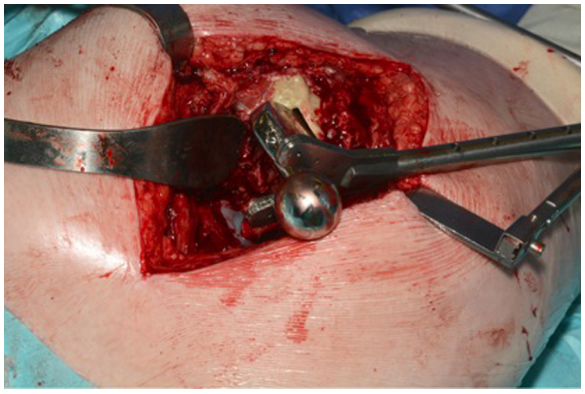

Fig. 1. Removal of stem.

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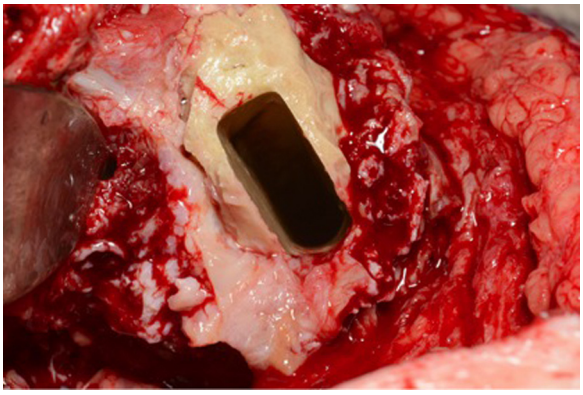

Fig. 2. Inspection of cement mantle for version and stability.

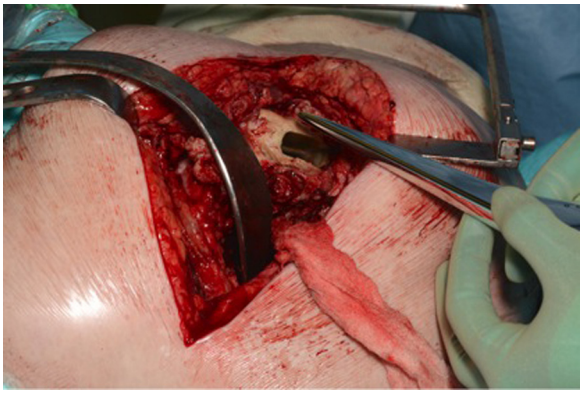

Fig. 4. Insertion of new stem without centraliser.

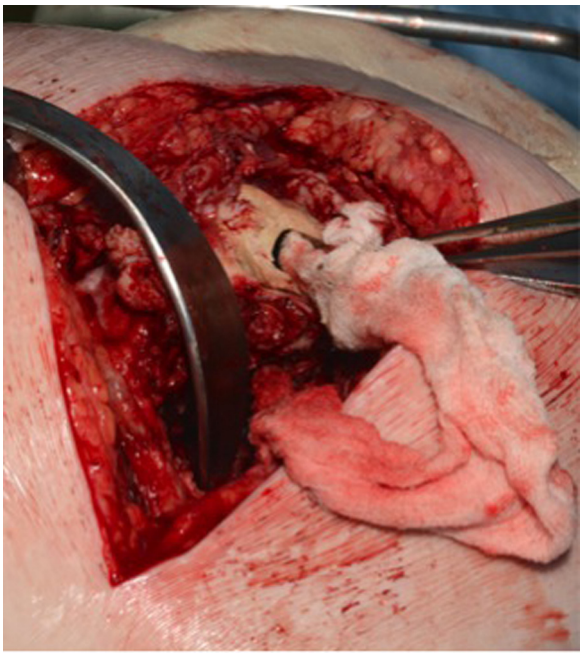

Fig. 3. Protect the canal.

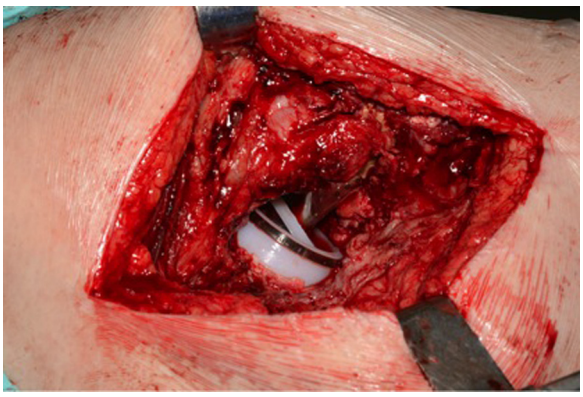

Fig. 5. Reduction and confirm stability.

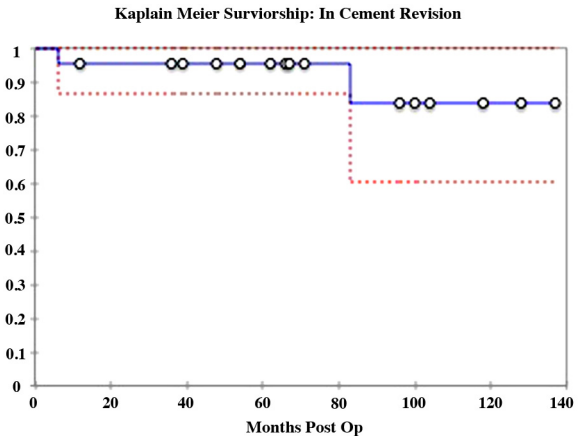

Fig. 6. Survivorship: in-cement revision.

stem with the greater trochanter and normal anatomical markers and the stem is assumed to be stable.

The head is then applied, the hip reduced (Fig. 5) and layered soft tissue closure completed.

3. Methods

We retrospectively reviewed 250 patients undergoing revision by a single surgeon, at one institution over a 5 year period between 2004 and 2009.

Twenty-three patients were identified as having undergone "In-cement" revisions. We recorded demographic data, the reason for revision, and length of follow-up at last review. The primary outcome measure was requirement of re-revision.

4. Results

The twenty-three patients included 13 females and 10 males with an average age of 65 years (43–84). The reasons for initial revision (Table 1) were recurrent dislocation 13 (56.6%) (11 for wear in cemented cups over 10 years old and 2 thought to be secondary to malposition of acetabulum), aseptic loosening acetabulum 9 (39.1%) and infection 1 (4.3%).

The average patient follow-up was 67 months with a range from 12 months to 128 months. The overall survivorship was 91.3% (Fig. 6), with no patient requiring re-revision for stem loosening or mechanical failure. Two patients required re-revision for infection

Table 1
Reason for revision.

Reason for revision	No. 23
1. Recurrent dislocation	13
2. Aseptic loosening acetabulum	9
3. Infection	1