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## How Pre-Operative Templating Could Have Prevented Severe Trendelenburg Gait



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Pre-operative templating would have permitted the identification of a more appropriate offset and avoided an extreme case of Trendelenburg Gait.

Grant Shaw, Orthopaedic Surgeon at [Queen Alexandra Hospital](#) in Portsmouth, UK, describes the case of a new patient who presented with the worst case of Trendelenburg gait he had come across. Dr Shaw was required to perform a hip revision that he believes could have been avoided had the primary THA been planned and templated pre-operatively.



The patient, a young (mid 50s) fit, female patient came to see Dr Shaw because she was disappointed with her initial hip replacement surgery carried out at a different center. He diagnosed her obvious Trendelenburg gait as being caused by a poor gluteus medius muscle function. The primary arthroplasty had been done using an anterior-lateral approach which carries a 1% risk of significant Trendelenburg gait. The patient was able to recall the moment when the abductor muscle detached (just two days after her surgery) and a year later she was still unable to walk without a stick.

By analyzing the primary post-operative X-ray using [Materialise OrthoView software](#), Dr Shaw was able to identify that the right femoral offset measured 42 mm and that this compared with 32 mm on the healthy left side. As the original right femoral offset was also likely to be about 32 mm, the increase to 42mm would have put the abductor muscle under extra tension after the initial surgery. This would have made the initial repair more vulnerable to failure, especially in the case of a young active patient.

This patient's extremely small bones would not have been apparent through external examination or in operating room and is difficult to detect when radiographs are viewed in the traditional way. Templating would have revealed the patient's unusual physiognomy and enabled the surgeon to trial a variety of alternative prosthesis on-screen in order to select one with a shorter offset before the operation.

Revision surgery was required to restore the correct offset and achieve the appropriate muscular tension but Dr Shaw believes this could have been avoided had a prosthesis with a more suitable offset measurement been chosen for the initial procedure. Orthopaedic surgeons who choose to template and plan their surgical cases pre-operatively are able to plan ahead for any special considerations, such as an anatomic anomaly or the need for particular implants or implant sizes.

Dr Shaw templates all of his procedures, both primary and revision cases, with [Materialise OrthoView](#) and when this patient presented, the pre-operative planning software enabled him to identify a more suitable prosthesis for her anatomy (in this case a cemented Stryker Exeter stem, size #0, 35.5 offset #0, Head 22) and correct the previously excessive offset. The abductor muscle was also reattached with soft tissue anchors during the procedure.

One year after surgery her abductor function was much improved although not normal. She was able to walk with a mild but acceptable limp without using a stick and used a stick for country walks. She is happy with the end result!

**Source & Image Credit:** [Materialise Medical](#)

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