Modular Neck Fractures

There are two kinds of prosthesis designs currently used in hip replacement surgery. Monoblock is a femoral stem prosthesis made of a single piece, while modular prostheses are made of two modules: the femoral stem and the femoral neck. The stem can be of different sizes, and the neck is of different sizes and different neck angle versions.

Modular hip systems have gained popularity for use in total hip arthroplasty for the last 30 years. These modular systems offer the surgeon the ability to adjust the femoral offset, correct leg length and achieve hip stability. However, there is increasing concern of premature failure with these modular systems resulting from material fracture.

Serious fractures of metal artificial femoral stems are occurring more frequently. When an artificial hip stem fractures, emergency surgery is required to remove and replace the broken hardware. This kind of fracture most often happens with what are called modular stems and modular femoral necks. Removal and replacement of a fractured or broken hip stem or modular neck is not a simple surgery. Recovery may be long and painful. Additional future surgeries may be necessary. The economic burden associated with the emergency revision surgery can be crippling, often totaling over a hundred thousand dollars.

While several manufacturers use a modular stem and neck design, Wright Medical Technology has promoted its Profemur® Hip System of model hip stems and modular necks in the United States since approximately 2003. Tens of thousands of these Profemur® modular necks have been implanted. Unfortunately, Wright Medical Technology Profemur® modular neck fractures are now occurring in unprecedented numbers. United States Food and Drug Administration (FDA) Manufacturer and User Facility Device Experience (MAUDE) database contains reports of more than two hundred Wright Medical Profemur® modular neck fractures.

On January 2, 2014, *JBJS Case Connector*, an online case report journal published by *The Journal of Bone and Joint Surgery*, issued a "Watch" regarding femoral neck fractures in patients whose implants used modular head-neck and neck-stem designs. While some of these designs are no longer available from manufacturers, thousands of such devices have already been implanted. This Watch encourages surgeons to be wary about specific aspects of modular hip design.

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Modular Neck Fractures

The Cause of Modular Neck Fractures

The fracture of an artificial hip modular neck usually is the result of the combined processes of micro motion and fretting corrosion. Over time, usually several years, what begins as a microscopic crack in the body of the modular neck grows. Eventually, only a small piece of metal holds the neck together. Then, suddenly, it breaks in two.

There are many reasons for prosthesis fracture. Orthopaedic implants are subject to crevice corrosion, fretting corrosion, galvanic corrosion and pitting corrosion.

Fretting is a phenomenon which occurs between two contacting bodies experiencing reciprocating motion. Small scale reciprocating movements occur between the femoral stem and the femoral neck at the taper junction. Microscopic cracks develop in the fretting zone that can lead to femoral neck fracture.

Another type of process occurring at the taper connection is crevice corrosion. The crevice between two modules will be a corrosion site if there is enough space to allow the income of an aqueous solution. As the corrosion in this zone progresses, oxygen depletion will lead to an excess of positively charged ions in the surrounding aqueous environment of the crevice. The negatively charged chloride ions will migrate to balance them. As a result, hydrochloric acid will form. Hydrochloric acid can dissolve titanium or cobalt alloys which are otherwise stable. Once the crevice corrosion has begun it continues to corrode.

There is also a form of extremely localized, symmetric corrosion called pitting corrosion. It leads to the creation of small holes in the metal. The mechanism of pitting corrosion is probably the same as crevice corrosion.

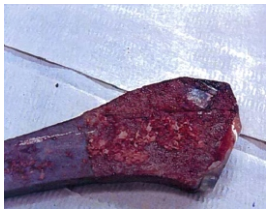
What to do

There may be no symptoms or warning signs of the impending fracture of an artificial hip modular neck. There is no diagnostic test your doctor can do to determine if your modular neck is in the process of fracturing.

The neck of a modern artificial hip stem should not break. If it does, the patient may have a claim against the manufacturer for damages. Modular neck fractures are NOT the fault of the implanting surgeon. In fact, some surgeons who implanted these devices feel they were misled by the manufacturer's promotion of these devices, and agree that these products are defective.

If you have suffered a modular neck fracture there are things that need to be done immediately to preserve the evidence, i.e. the broken hardware that the surgeon removes. Delay in contacting an attorney may compromise your case. If you suffered a modular neck fracture of your artificial hip, contact Pope McGlamry at 877.285.7656 or visit our website at www.popemcglamry.com to learn what your legal rights are.

Disclaimer: All uses of the Profemur® mark is for informational and product identification purposes only. Nothing in this brochure should be taken as either medical or legal advice, but instead should act as a resource in providing general information that may be useful to the general public. Pope McGlamry is not affiliated with the manufacturer Wright Medical or its distributors.



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