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**Muscle Damage After Total Hip Arthroplasty Done with the Two-Incision Minimally Invasive and the Mini-Posterior Techniques**

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**20 Word Summary:** In this cadaver study, the two-incision and the mini posterior hip arthroplasty techniques cut or damaged measurable amounts of muscle or tendon in every case.

**Introduction:** Some surgeons suggest that two-incision total hips are done without cutting any muscle or tendon. To our knowledge that claim is not supported by any published clinical or basic science data. This study quantified the amount and location of hip muscle damage after a two-incision technique compared to that after a mini-posterior hip arthroplasty.

**Materials and Methods:** Our institutional review board approved a 20 cadaver matched-pair analysis. The two-incision side was assigned randomly; the mini-posterior was done contralaterally. Two-incision hips were done with fluoroscopy as previously described using an un-cemented socket and a straight, fully coated femoral stem. The mini-posterior hips were done with the same implants.

**Results:** Muscle damage was graded using Tornetta and colleagues' method. Every 2-incision hip had measurable damage to the abductors, the external rotators or both (mean 5.5% and 6.25% of medius intramuscular and tendon damage, and 22.4% and 54% of minimus intramuscular and tendon damage respectively; 66.6% of piriformis and 50% of conjoint tendon). Every mini-posterior hip had the external rotators taken down and there was additional measurable damage to the abductors (4.4% and 12.42% of medius intramuscular and tendon damage and 7.4% and 29.1% of minimus intramuscular and tendon damage respectively).

**Conclusion:** This study does not support the contention that a two-incision total hip is done without cutting any muscle or tendon. No 2-incision hips were done without cutting or damaging gluteus medius or minimus muscle or piriformis or conjoint tendon of the hip. Similarly, every mini-posterior hip damaged abductor muscle even after taking down the external rotators for exposure.