Introduction

Hip arthroscopy is an established field within orthopaedic surgery. The majority of procedures involve repairs of acetabular labrum and arthroscopic treatment of femoracetabular impingement (FAI). These procedures are being performed with increasing frequency annually. Fluoroscopic guidance is recommended during these procedures, and radiation exposure to the surgeon, staff and patient remains a valid concern. The purpose of this study is to measure radiation exposure to the surgeon during hip arthroscopy and determine if this exposure remains below the recommended annual occupational radiation exposure thresholds as recommended by the International Committee on Radiological Protection (ICRP)
Surgeon Radiation Exposure in Hip Arthroscopy: A Prospective Analysis
John P. Salvo, MD and Jake Zarah, MD
Department of Orthopaedic Surgery, The Rothman Institute and Thomas Jefferson University Hospital
Philadelphia, PA
The authors have no relevant disclosures.

**Materials and Methods**

Prospectively, radiation exposure was measured for a single surgeon at a single outpatient facility for all hip arthroscopic procedures over a three year period. A radiation dosimeter was worn on the outside of the surgeon’s chest on the lead apron. Standard pre-operative and intra-operative imaging was used for all patients. Radiation readings were prospectively measured for deep dose equivalent (DDE), lens dose equivalent (LDE), and shallow dose equivalent (SDE). The cumulative radiation exposure was tabulated in millirem (mrem) and per-patient exposure as well as annual exposure for a surgeon performing 100 hip arthroscopies were calculated.

**Results**

Between July 2011 and July 2014, 209 patients underwent a total of 280 hip arthroscopy procedures by a single surgeon at a single outpatient facility. There were 90 labral repairs, 83 femoroplasties, 26 acetabuloplasties, 66 labral debridements, 8 trochanteric bursectomies and 7 iliopsoas releases.
Hip arthroscopy and hip preservation procedures are being performed with increasing frequency annually. Fluoroscopic guidance is utilized for joint distraction, entrance into the central compartment, and during various parts of the procedure. As with any procedure that utilizes fluoroscopy, radiation exposure to the surgeon and staff is a concerning occupational risk. The ICRP sets recommended annual safety thresholds for occupational radiation exposure. Current annual safety thresholds are 50,000 mrem to the hands, 50,000 mrem to the skin, hands and feet, 15,000 mrem to the eye, and 30,000 mrem to the thyroid of healthcare workers. Our study shows surgeon radiation exposure during hip arthroscopy falls well below the annual safety thresholds recommended by the ICRP for 100 cases per year. For surgeons performing more than 100 hip arthroscopic procedures annually, the exposure will be higher. Appropriate safety equipment such as lead aprons, thyroid shields, and leaded glasses are still recommended, especially for high volume hip arthroscopists.

References: