Sports Medicine

Evidence Matters

Research Bulletin

The Stryker Hip Distraction System Allows for an Increased Viewing Area During Fluoroscopic Image Capture Compared to the Smith & Nephew Hip Distraction System

Top-Level Summary:

The tabletop extension of a hip arthroscopy accessory is important for function of the hip distraction system and needs to include radiolucent space to allow for fluoroscopic imaging of the hip during the procedure. Any limits to this feature in a tabletop extension may limit the ability to perform the surgical procedure. **The Stryker Hip Distraction (SYK) System is designed to have a larger viewing area (free of obstructions) than the Smith & Nephew Hip Distraction (SNN) System.**

To achieve this, the SYK System was designed to maintain as much of the viewing area as radiolucent, with less obstructions (metal and other radiopaque materials) in or near the viewing area of the hips as compared to the SNN System. The lack of perineal post (which is present in the SNN System) also allows the user to view of as much of the pelvis as possible, which helps to understand the anatomy of the pelvis, and compare the two hips directly.

Methods:

The useful viewing area was calculated by determining the radiolucent surface area of the tabletop (TT) extension of both the SNN and SYK systems (Table 1; Fig. 1).

Table 1: Construction of the SYK and SNN Systems.

Hip Distraction System	TT Extension (l x w)	Perineal Post	Viewable Area
SYK System	21 x 21 inches	No perineal post: no limitations on viewing fluroscopically around a perineal post	16 x 21 inches is radiolucent: total viewable area is 336 in^2
SNN System	TT extension is radiopaque	Perineal post is always placed in the same general area of the groin and is radiopaque (9 inch diameter)	6 x 6 inches is radiolucent on either side of the perineal post: total viewable area is 72 in^2

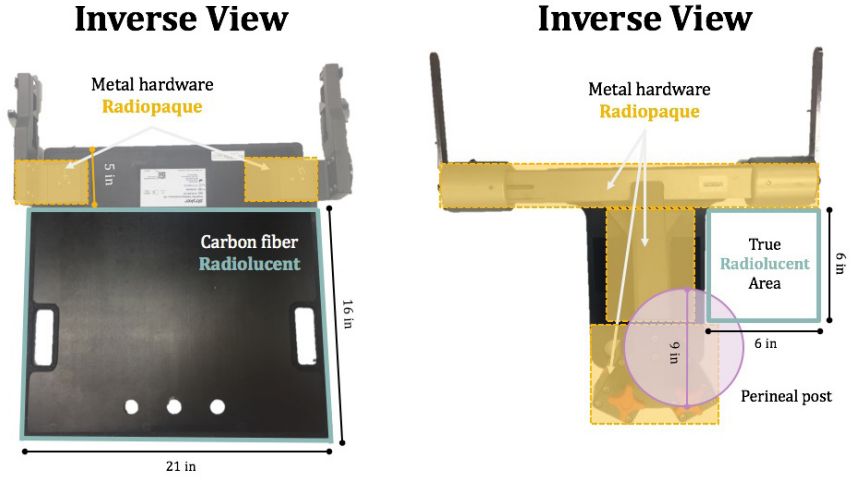

Figure 1:

The construction of the (a) SYK and (b) SNN TT extension. The metal hardware is identified by yellow shading, the perineal post is identified by purple shading and the radiolucent area is outlined in teal. Note: the position of the perineal post dictates the positioning of the patient's hip.

Fluoroscopic imaging of the tabletop extensions with cadaveric specimens was used to confirm this (Fig. 2).

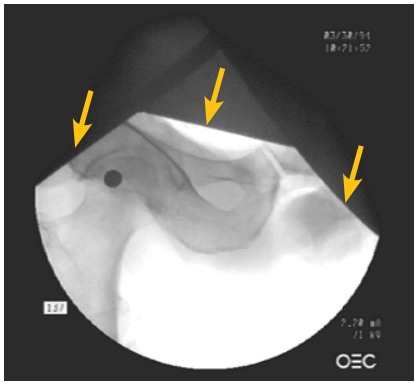

Figure 2:

Specimens as viewed with fluoroscopy imaging (a) SYK System showing a zoomed-out view of a hip (entire pelvis visible); (b) SNN System showing a zoomed-out view of a hip. Note in these images that a 12.7 mm ball bearing is sometimes present as a reference for dimension, and yellow arrows indicate metallic support structures of the table extensions.

Results:

Fluoroscopic imaging of the hip with the SYK System is available over a broader area/range than is available with the SNN System (336 in^2 vs 72 in^2, respectively).[1] In addition to having a larger cross-sectional area, the Stryker system does not limit viewing space in the middle of the tabletop extension. Limited viewing space can obscure important anatomical features in a surgical procedure.

Fluoroscopic Viewing Capabilities

Hip Distraction System	Hip Joint of Interest	Areas Adjacent to Hip Joint	Entire Pelvis
SYK System	✓	✓	✓
SNN System	✓		

Clinical Relevance:

Fluoroscopy is critical to guide the surgeon during the hip arthroscopy procedure, and providing an increased viewing area can facilitate imaging to assist the surgeon in performing the procedure.[1] The SYK System was designed to maintain as much of the tabletop extension as possible to be radiolucent to allow for varying patient placement to accommodate anatomical differences, surgical approaches, and surgeon preferences.[1] This allows the user to have view of as much of the pelvis as is possible, which helps to understand the anatomy of the pelvis, and compare the two hips directly.

References:

1. Stryker DHD13364 2017 Rev A

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