



Catamaran[®] SI Joint System



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Catamaran Targeted & Differentiating SI Joint Opportunities



PRIMARY SI Joint



REVISION SI Joint



LONG CO

Advanced

Email

Save

Review

> Expert Rev Neurother. 2013 Jan;13(1):99-116. doi: 10.1586/ern.12.148.

Sacroiliac joint pain: a comprehensive review of epidemiology, diagnosis and treatment

Steven P Cohen¹, Yian Chen, Nathan J Neulof

Affiliations

+ expand

PMID: 23243394

DOI: 10.1586/ern.12.148

Abstract

Sacroiliac joint (SIJ) pain is an underappreciated source of mechanical low back pain, affecting between 15 and 30% of individuals with chronic, nonradicular pain. Predisposing factors for SIJ pain include true and apparent leg length discrepancy, older age, inflammatory arthritis, previous spine surgery, pregnancy and trauma. Compared with facet-mediated and discogenic low back pain, individuals with SIJ pain are more likely to *resent a smaller lumbar moment and associated collateral pain below L5. Owing in part to its extremely variable. Although no si*

diagnostic blocks. Evidence suppo studies demonstrating intermedia In those who fail to experience sui provide significant relief lasting up treatment section being primarily

Review

> Anesth Analg. 2005 Nov;101(5)

Sacroiliac joint pain: a comprehensive review of anatomy, diagnosis, and treatment

PubMed Disclaimer

Review > Rheumatol Ther. 2021 Sep8(3):1061–1072. doi: 10.1007/s40744-021-00350-8. Epub 2021 Jul 30.

Novel Interventional Techniques for Chronic Pain with Minimally Invasive Arthrodesis of the Sacroiliac Joint: (INSITE, iFuse, Tricor, Rialto, and others)

Alan D Kaye^{1 2}, Amber N Edinoff³, Logan Scon⁴, Sean Yun⁵, Kyle J Farrell⁶, Aaron J Kaye⁷, Rubij J Shah⁸, Elyse M Cornett⁸, Azem A Chami⁸, Bruce M Dixon⁸, Michael A Alvarado⁸, Omar Viswanath^{5 6 9}, Ivan Urts^{8 10}, Aaron K Calodney^{8 11}

Affiliations + expand

PMID: 34331270 PMCID: PMC8380604 DOI: 10.1007/s40744-021-00350-8

Abstract

Acute and chronic pain are public health issues that clinicians have been battling for years. Opioid medications have been a treatment option for both chronic and acute pain; however, they can cause unwanted complications and are a major contributor to our present opioid epidemic. The sacrocaudal (S1) joint is a common cause of both acute and chronic low back pain. It **affects about 15-25% of patients with axial low back pain, and up to 40% of patients with ongoing pain following lumbar fusion.** Recent advances in the treatment of S1 joint pain have led to the development of a wide variety of ways to stabilize the joints themselves in order to serve as a source for pain. This is a minimally-invasive approach to treating chronic low back pain by injecting patients to lengthy surgery or spinal fusion and abuse. Minimally-invasive S1 fusion is a minimally-invasive approach (i.e., CornerLock, LiNQ, etc.) to treating chronic low back pain by placing the prone position but allows for less invasive treatment. This approach can be used to determine which fusion system may be the best way of treating chronic low back pain by using minimally-invasive S1 fusion devices, and their associated risks.

3. doi: 10.1213/01.ANE.0000180831.60169.FA.

Steven P Cohen¹
Affiliations + expand
PMID: 16244008 DOI

Abstract

Abstract

Sacroiliac (SI) joint pain is a challenging condition affecting 15% to 25% of patients with axial low back pain, for which there is no standard long-term treatment. Recent studies have demonstrated that historical and physical examination findings and radiological imaging are insufficient to diagnose SI joint pain. The most commonly used method to diagnose the SI joint as a pain generator is with small-volume local anesthetic blocks, although the validity of this practice remains unproven. In the present review I provide a comprehensive review of the anatomy, function, and mechanisms of injury of the SI joint, along with a systematic assessment of its diagnosis and treatment.

- 
- TENON**
MEDICAL®

AO Principles for Arthrodesis/ Fusion

- Defect creation/ Joint prep

- Robust fixation

- Grafting

AO SPINE



Catamaran SI Joint Fixation Device

Robust, Single, Titanium Implant

Implant Width
26mm

Graft Capable
Pontoon and
deliver up to
autograft to
fusion

Fenestrated Pontoon
Designed to help facilitate
bony in-growth

Implant Length
30mm and 40mm

Transfixing
Osteotome Bridge
Designed to disrupt the
articular surface to help
facilitate a *true*
arthrodesis



Indications & Contraindications

Indications for Use:

The Catamaran SI Joint Fusion System is intended for sacroiliac joint fusion for conditions including sacroiliac joint disruption and degenerative sacroiliitis.

Contraindications:

- Skeletally immature spine
- Deformity
- Severe osteoporosis
- Morbid obesity
- Tumor resection



Tenon Medical, Inc.
Catamaran® JIB Kit
INSTRUCTIONS FOR USE

Only device to use by or on the order of a physician.

IMPORTANT NOTICE: It is highly recommended that the physician adhere to the instructions, contraindications, warnings, and precautions outlined in this document.

DEVICE DESCRIPTION:
The Catamaran JIB Kit includes a set of instruments and the Catamaran SI Joint Fusion System. Refer to IFU1001 for the instructions on the Catamaran SI Joint Fusion System. All components of the Catamaran JIB Kit are provided **NON-STERILE** and must be cleaned and sterilized by the user prior to use according to instructions included in this document.

INDICATIONS FOR USE:
The Catamaran SI Joint Fusion System is intended for sacroiliac joint fusion for conditions including sacroiliac joint disruption and degenerative sacroiliitis.

INTENDED USE:
The Catamaran JIB Kit is intended to be used in conjunction with the Catamaran SI Joint Fusion System for accessing the sacroiliac joint and to facilitate bone graft removal and insertion into the implant.

CONTRAINDICATIONS:
The Catamaran SI Joint Fusion System is contraindicated in patients with the following conditions:

- Skeletally immature spine
- Deformity
- Severe osteoporosis
- Morbid obesity
- Tumor resection
- Active infection at the treatment site

IMPLANTED DEVICE IDENTIFICATION CARD:
An Implanted Device Identification Card is included with the Catamaran SI Joint Fusion System. This is to be completed and placed in the patient's medical record to keep the card as a record of surgery with a metallic implant.

WARNINGS:

- Patient sensitivity to implant materials should be considered and assessed prior to surgery.
- Due to immobilization of the SI joint, female patients of childbearing potential should be cautioned that vaginal delivery may not be advisable following SI joint surgery. If the patient does become pregnant, it is advised that the patient consult with her obstetrician (OB/GYN) prior to delivery to determine whether C-section is recommended.

Page 1 of 4

IFU1002 Rev 1



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Catamaran® JIB Kit
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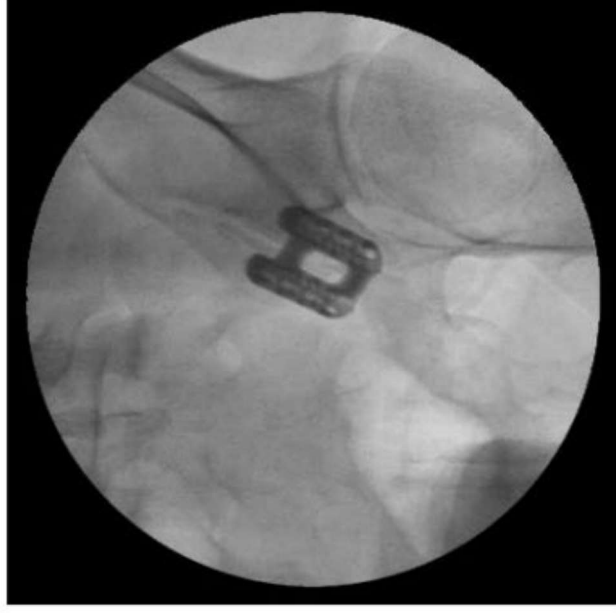
Page 1 of 4

IFU1002 Rev 1

Catamaran Designed to Transfix the SI Joint



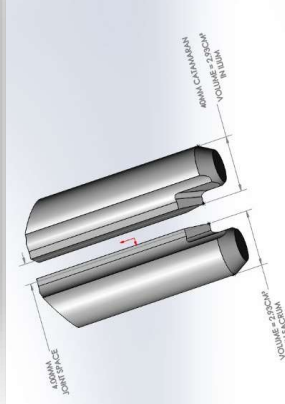
Modified Inlet View



Modified Outlet View



Lateral View



10 x 40 Catamaran Implant

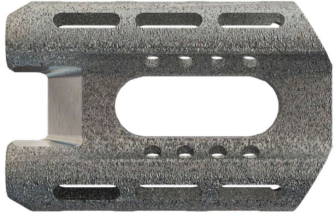
Volume in Ilium 2.93cm ³	Volume in Sacrum 2.93cm ³	Volume in Joint space 0.66cm ³
% of Volume in Ilium 45%	% of Volume in Sacrum 45%	% of Volume in Joint Space 10%

90% Anchored in Sacrum or Ilium Bone

10% laterally across the joint

Catamaran SI Joint Cases Completed 2021-2024

600



40mm Implant



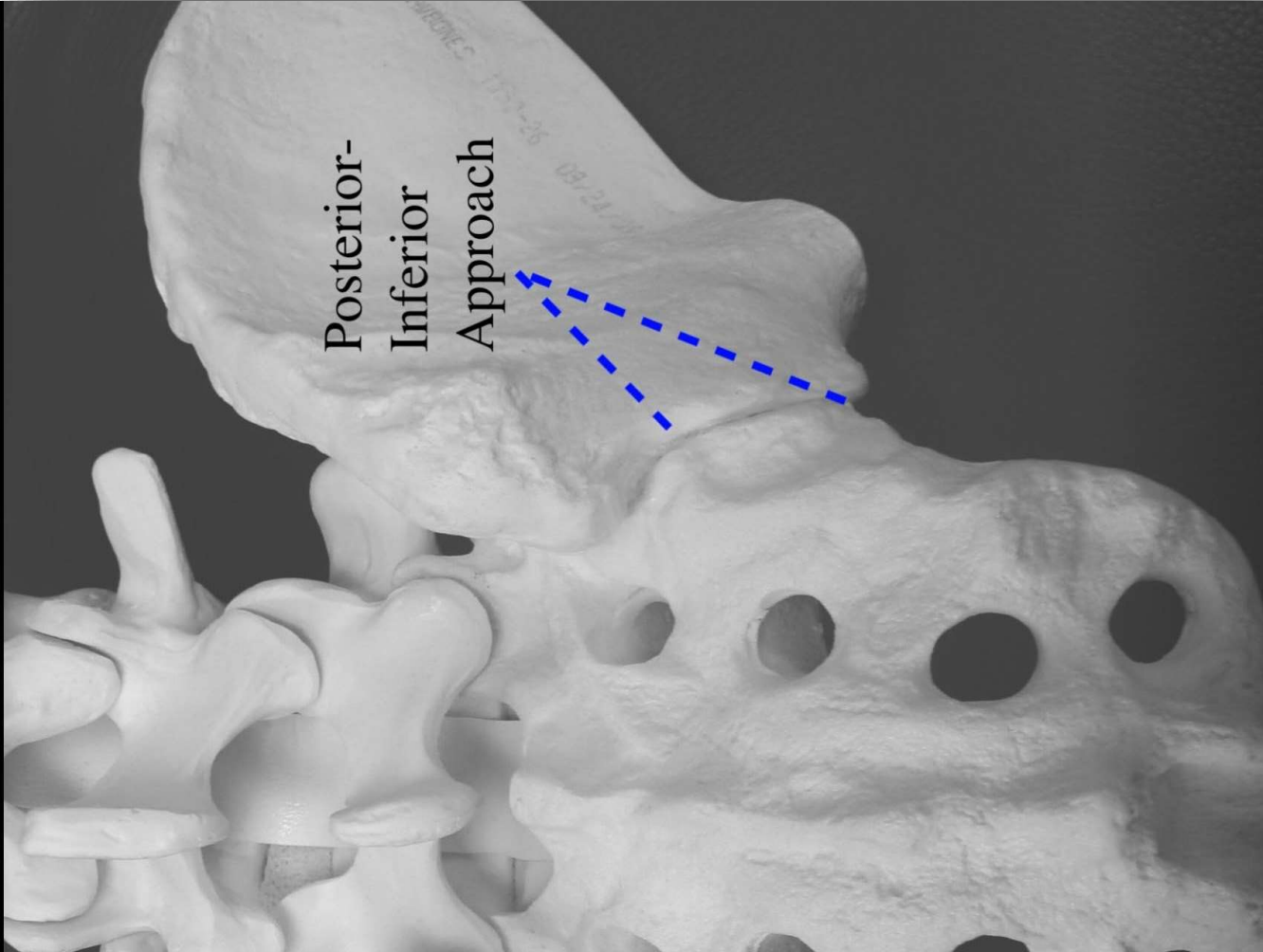
30mm

Inferior-Posterior Approach

Inferior-Posterior “Window”

- Below dorsal recess from PSIS to PIIS

Subchondral bone:
Thick and strong
cortical bone



Why Inferior-Posterior Approach?

- Minimal soft tissue dissection
- Directly accessing the joint in a safe manner
- Allows for necessary decortication of the joint
- Narrowest portion of the joint (2-4mm)
- Avoids dorsal recess and interosseous ligament
- Requires a singular implant
- Placement in the dense bone of the SIJ

The benefits of using Posterior Inferior approach

Avoids lateral vascular structure

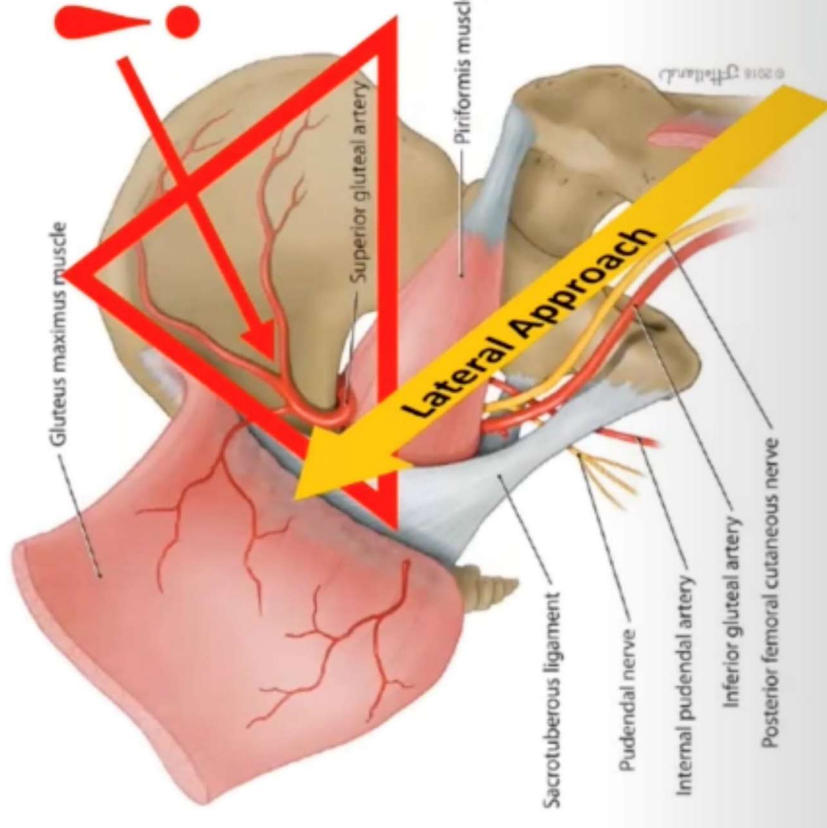
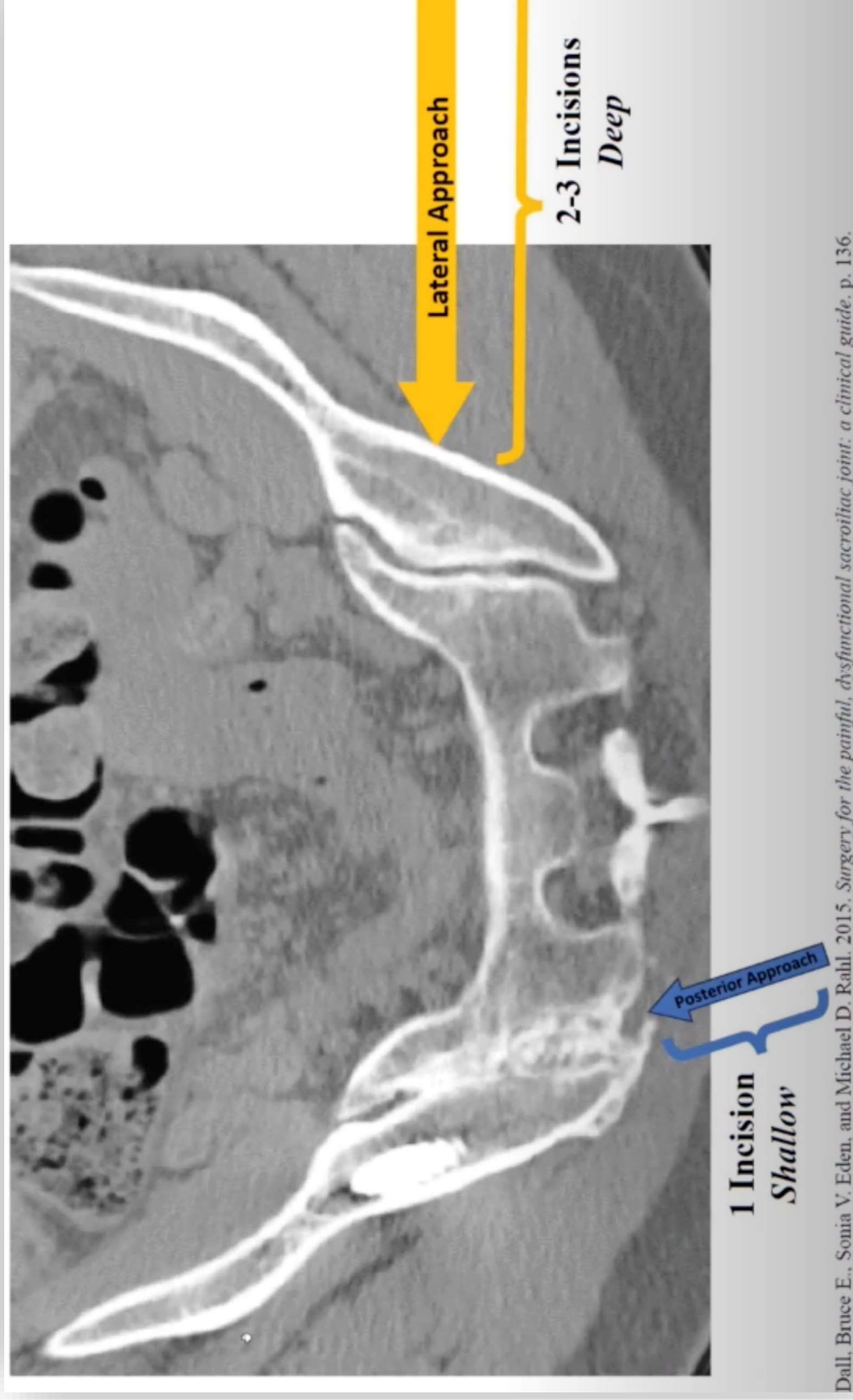


Fig. 1 The vascular supply of the sacrotuberous ligament (STL) and surrounding anatomy as viewed from the gluteal region

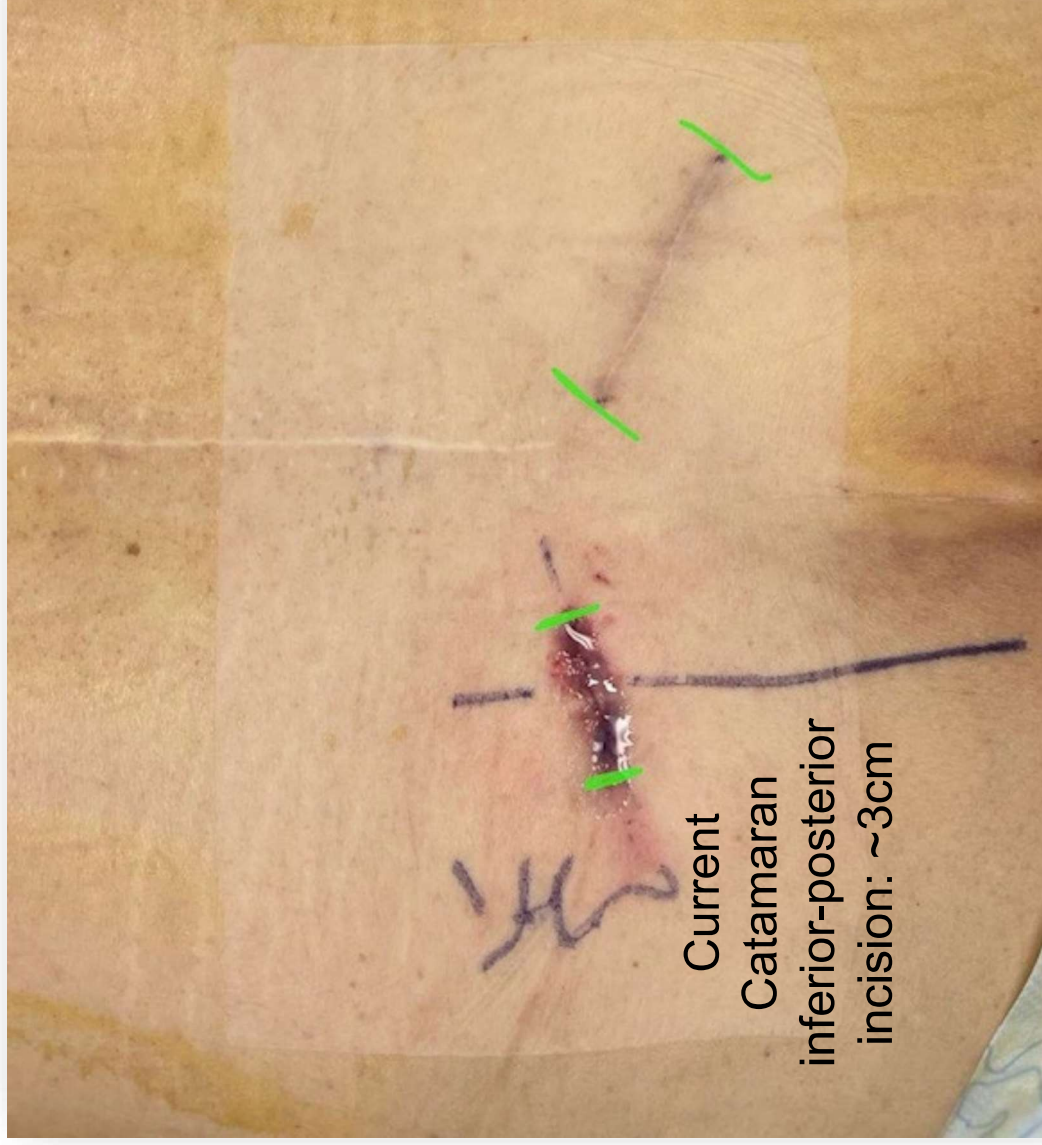
Adapted from: Lai, J., du Plessis, M., Wooten, C. et al. The blood supply to the sacrotuberous ligament. Surg Radiol Anat. 2018;120(1):1-6. <https://doi.org/10.1007/s00276-017-1830-2>

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Minimal Tissue Dissection Inferior-Posterior Approach A



Minimally Invasive Approach- ~3cm Incision



Catamaran SI Joint Imaging Overview

- Simplified and reproducible implantation technique
- Clearly defined imaging sequence
 - **Modified inlet**
 - Establishes entry into joint
 - **Modified outlet**
 - Confirms medial/lateral trajectory
 - **Lateral**
 - Depth



Catamaran Surgical Technique Overview

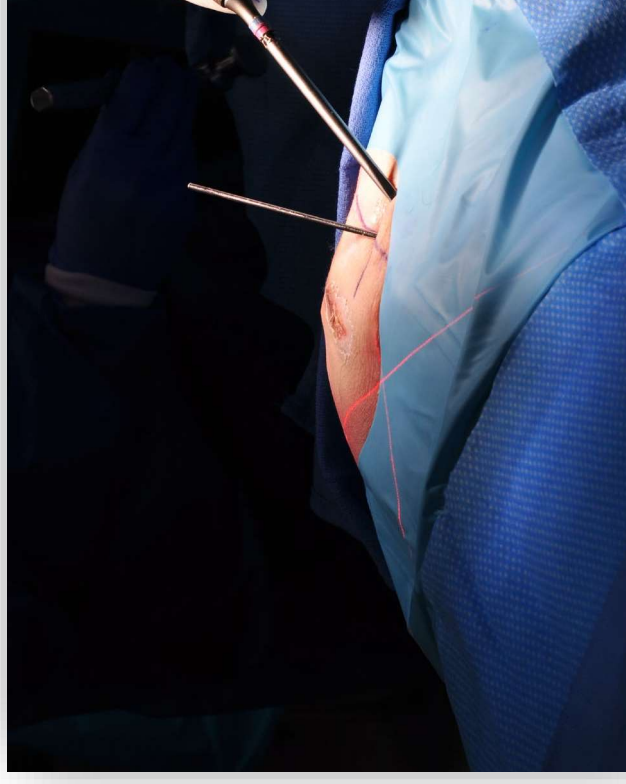


OPTIONAL Joint Preparation for Arthrodesis

- Inferior-Posterior approach allows for direct access to the SI Joint

Goals:

- Create defect in bone surface
- Stimulate healing response
- Trigger bone neoformation between recipient bed and bone graft



“Instrumentation of a large joint with of appropriate bony substrate is like pseudoarthrosis and failure.”¹⁰

AANS/CNS Letter to NASS about
10. aans.org website. Accessed June

Favorable Reimbursement Landscape & Support for Catamaran

with CPT 27279 & 27280

2024 Physician and Facility Billing Guide Sacroiliac Joint Fusion

PHYSICIAN CURRENT PROCEDURAL TERMINOLOGY CPT*					
CPT/ HCPCS	Description	Total Facility RVUs	Total Non-Facility RVUs	Medicare Physician Fee Facility	Medicare Physician Fee Non-Facility
27278	Arthrodesis, sacroiliac joint, percutaneous, with image guidance, including placement of intraarticular implant(s) (eg, bone allograft(s), synthetic device(s)), without placement of transformation device	14.03	364.53	\$459	\$11,936
27279	Arthrodesis, sacroiliac joint, percutaneous or minimally invasive (indirect visualization), with image guidance, includes obtaining bone graft when performed, and placement of transforming device	24.16	N/A	\$791	N/A
27280	Arthrodesis, open, sacroiliac joint, including obtaining bone graft, including instrumentation, when performed	41.14	N/A	\$1,347	N/A

HOSPITAL OUTPATIENT AMBULATORY PAYMENT CLASSIFICATION (APC) & AMBULATORY SURGERY CENTER (ASC)

CPT* Code	Description	HOSPITAL OUTPATIENT			ASC	
		APC	Group Title	SI	CY 2024 National Medicare Average Payment	Payment
27278	Arthrodesis, sacroiliac joint, percutaneous, with image guidance, including placement of intraarticular implant(s) (eg, bone allograft(s), synthetic device(s)), without placement of transformation device	5116	Level 6 Musculoskeletal Procedures	J1	\$17,756	J8 \$11,684
27279	Arthrodesis, sacroiliac joint, percutaneous or minimally invasive (indirect visualization), with image guidance, includes obtaining bone graft when performed and placement of transforming device Implantable/insertable device, not otherwise classified	5116	Level 6 Musculoskeletal Procedures	J1	\$17,756	J8 \$14,703
27280	Arthrodesis, open sacroiliac joint including obtaining bone graft, including instrumentation when performed	INPATIENT-ONLY				

In the hospital outpatient prospective payment system (OPPS), CMS assigns all CPT and HCPCS codes a status indicator (SI) to indicate if and how a service is reimbursed. In Ambulatory Surgical Center (ASC), CMS assigns CPT and HCPCS codes a Payment Indicator (PI) to indicate how payment is determined. Below is a list of SIs, PIs, and abbreviations used in this guide and their definitions:

J1 - Paid under OPPS; all covered Part B services on the claim are packaged with the primary "J1" service for the claim, except services with OPPS B-2, G, H, L and U. Note: In the ASC, comprehensive APCs do not apply; procedures are paid separately if applicable.

J8 - Device-intensive procedure added to ASC list in CY 2008 or later, paid at adjusted rate.

INPATIENT HOSPITAL ICD-10-PCS CODES	
ICD-10-PCS	Description
05G704Z	Fusion of Right Sacroiliac Joint with Internal Fixation Device, Open Approach
05G604Z	Fusion of Left Sacroiliac Joint with Internal Fixation Device, Open Approach
05G734Z	Fusion of Right Sacroiliac Joint with Internal Fixation Device, Percutaneous Approach
05G634Z	Fusion of Left Sacroiliac Joint with Internal Fixation Device, Percutaneous Approach

INPATIENT HOSPITAL MS-DRGS*	
MS-DRG	Description
459	Spinal Fusion except Cervical with MCC
460	Spinal Fusion except Cervical without MCC
National Average Payment	
\$46,437	
\$25,661	

* Other MS-DRGs may be applicable.



Reimbursement Support for Catamaran

Tenon Medical is pleased to announce a partnership with The Pinnacle Health with Reimbursement for the Catamaran SI Joint Fusion Device.

Reimbursement Services

- General Reimbursement Questions
- Benefit Verification and Prior Authorization for Patients
- Preservice Appeal and Claim Appeal Support

To access hotline support and enroll in the patient support portal please call or email Catamaran Representative

Tenon@thepinnaclehealthgroup.com
(866) 369-9290

Available Monday-Friday 8:30am to 6:00pm EST
Coding, Payment, Patient Specific Support, Appeal and Coverage Questions



2023 Pinnacle pre-auth approval



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Comprehensive Mechanical Testing to Support FDA Approval

- Mechanical Testing
 - Strength & Endurance
 - Stiffness
 - Axial Pullout
- In all tests Catamaran greatly exceeded the biomechanical thresholds of the SI joint

White Paper

SACROILIAC JOINT FUSION:
Performance Integrity of the
Catamaran™ SI Joint Fixation Device in
a Novel, Inferior-Posterior Approach
for Sacroiliac Joint Fusion
Lisa A. Ferrara, Ph.D. — Element Materials Technology

Introduction

Early biomechanical stability is critical to establishing a favorable fusion environment to help promote arthrodesis. The well-known fact that an implantable device engages and interfaces with the surrounding cortical and cancellous bone structures is paramount to attaining sufficient stability.^{1,9}

The anatomical design of the sacroiliac (SI) joint consists of an irregular-shaped, interlocking joint with a large surface contact area and strong ligamentous structures that form a self-bracing mechanism. The wedging of the sacrum between the pelvic bones further contributes to SI joint stabilization. The tight ligamentous band surrounding the SI joint provides substantial stability to the joint and limits it to relatively small motions that are approximately 2° to 3° in bending and translation in multiple planes around the joint axis for greater resistance to shear and axial loads. This joint is designed to stabilize mechanically compared to other areas of the musculoskeletal system that exhibit a greater range of motion.¹⁰

The SI joint is a strong load-bearing, weight-bearing synovial joint aligned along the longitudinal, load-bearing axis of the spine when in an upright posture. The SI joint serves as a force conduit to transfer axial loads from the spine to the pelvis and lower extremities, resulting in load sharing between these structures, aiding in attenuation of impact forces.¹⁰ Although the rotational forces of the SI joint are relatively low, repetitive motion created by daily activities such as walking, jogging, twisting at the hips, and jumping can increase the stresses on the joint and create the potential for SI joint degeneration and pain.¹⁰

The Catamaran Fixation Device (Tenon Medical, Inc. Los Gatos, CA) is implanted with an Inferior-Posterior approach along the longitudinal axis of the caudal portion of the SI joint. This region of the joint has the strongest cortical bone for implant purchase and best potential for bony fusion.⁷

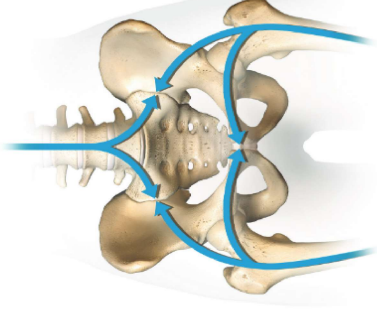


Figure 1. The SI joint is the largest joint in the body and allows for load transfer from the lumbar spine to the lower extremities.¹⁰

ABOUT THE CATAMARAN™
SI JOINT FIXATION DEVICE

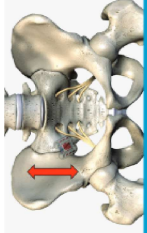
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Mechanical Test Summary

STRENGTH AND ENDURANCE TESTING

In mechanical testing, the Catamaran Fixation Device demonstrated 3-4 times greater than the forces exerted during normal human activity. The device is implanted through an Inferior-Posterior approach, which is in contrast to devices aligned across the SI joint along the compressive axis.⁷

Figure 2. Implantation plane for the Catamaran Fixation Device in line with the SI joint.



STIFFNESS

The Catamaran Fixation Device demonstrated a stiffness under mechanical loading that was 3-4 times greater than the stiffness of the SI joint as exerted during normal human activity such as walking.⁸

AXIAL PULLOUT

The Catamaran Fixation Device resisted axial pullout twice that of the SI joint as exerted during normal human activity such as walking loads.¹⁰

CONCLUSION

In mechanical testing, the Catamaran Fixation Device performed favorably, demonstrating a stiffness under mechanical loading that was 3-4 times greater than the stiffness of the SI joint as exerted during normal human activity such as walking. The device is implanted through an Inferior-Posterior approach, which is in contrast to devices aligned across the SI joint along the compressive axis.⁷

ASTM standards served as guides for determining test parameters

References

1. Soder et al. Comparison of lumbar and pelvic pullout from in vivo patellar models from anterior cruciate ligament reconstruction. *Journal of Biomechanics*. 2010;43(12):2255-2261.
2. Soder et al. The sacroiliac joint: A review of the anatomy and biomechanics with clinical implications. *J. M. J. Orthopaedic*. 2010;43(12):2255-2261.
3. Horvath et al. Sacroiliac joint pain: anatomy, biomechanics, diagnosis, and treatment. *Am. J. Phys. Med. Rehabil.* 2005;34(12):1255-1261.
4. Fong et al. Sacroiliac joint pain: anatomy, biomechanics, diagnosis, and treatment. *Am. J. Phys. Med. Rehabil.* 2005;34(12):1255-1261.
5. Bortz et al. Sacroiliac Joint Biomechanics and Effects of Fusion. Doctoral Dissertation, University of Miami, Am.
6. Dwyer et al. Sacroiliac Joint Pain. *Journal of the American Academy of Orthopaedic Surgeons*. 2004;12:255-261.
7. Dill B. et al. Surgery for the Pelvis. *Operational Sacroiliac Joint. A Clinical Guide*. 2015. Springer International Publishing.
8. Knapik et al. Biomechanics of the Sacroiliac Joint. *Anatomy, Biomechanics, Sacral Disruption and*

Indications for use: The Catamaran SI Joint Fusion System is intended for sacroiliac joint fusion.

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Catamaran Single Center Initial Case Series

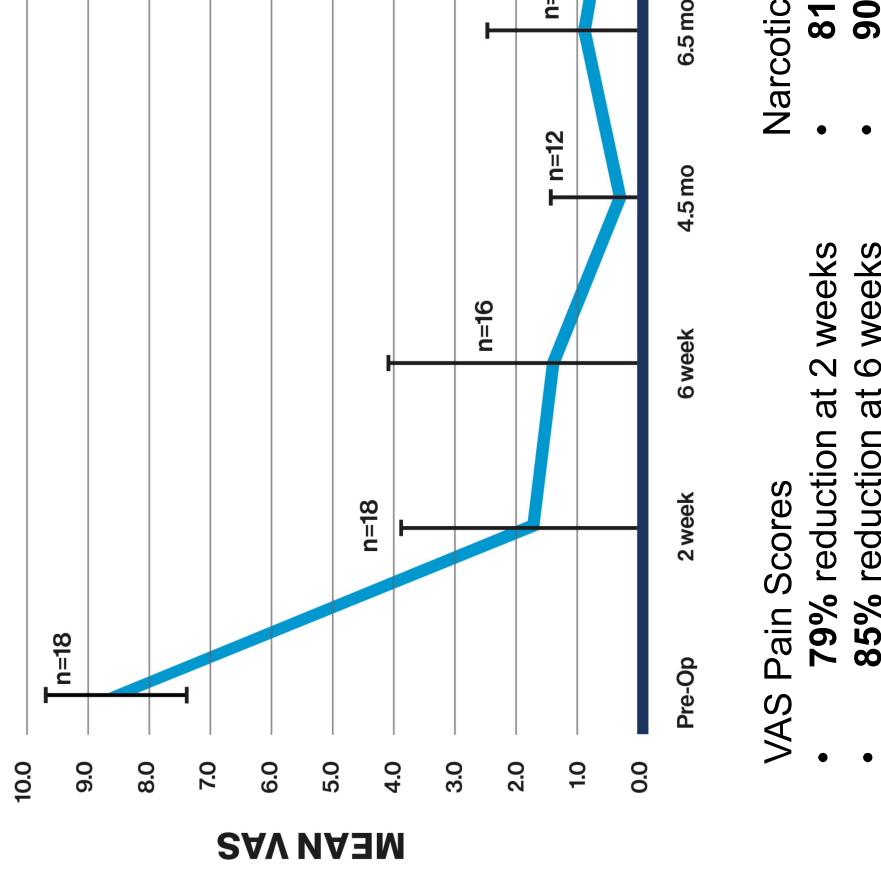
Michael Chaparro, MD

West Palm Beach, FL

Early clinical experience has shown Catamaran via an inferior posterior approach has the potential to deliver significant and sustained reduction in SI joint pain, as well as:

- Minimal blood loss and fluoroscopy time
- Reduced post-op pain
- Rapid reduction in pain medications
- Insertion pathway away from vascular and neuro structures
- Ideally suited for ASC / Outpatient setting

VAS Pain Scores





Prospective, Multi-Center, Single Arm Post-Market Feasibility Study of the Tenon Medical CATAMARAN SI Joint Fusion System

Study Design & Preliminary Outcomes



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Study Design / Objectives

- Prospective, multi-center, single arm, post-market feasibility study
- Designed to evaluate clinical outcomes of patients with sacroiliac joint disruption or degenerative sacroiliitis treated with CATAMARA Fusion System
- Up to 50 patients at up to 10 sites
 - Estimated study enrollment completed: June 2024
- Follow-up visits include baseline, procedure to discharge:
 - 2-3 weeks,
 - 6 weeks,
 - 3-, 6-, 12-, and 24-months post-procedure

Primary Endpoint

Subject Success at 6 months based on meeting all the following criteria:

1. Reduction from baseline VAS by at least 20 mm,
2. Lack of device-related serious adverse events,
3. Absence of neurologic worsening related to the sacral spine or to baseline, and
4. Absence of surgical re-intervention (removal, revision, reoperation, or supplemental fixation) for SI joint pain.

Secondary Endpoints

- Analysis individual components of primary composite subject success criteria
- Analysis of subject success rates at other time-points (12 and 24 months)
- Change in VAS SI joint pain score from baseline
- Change in ODI from baseline
- % of subjects with ODI improvement > 15 points from baseline
- **Radiographic Assessment by Independent Reviewer**
 - Fusion and device placement, loosening, migration and/or breakage
 - Bridging Bone will be assessed from CT only. Axial, coronal, sagittal and oblique reconstructions will be used to determine the presence of bridging bone.
- Summary of adverse events

Positive fusion results on initial study patients reaching 12 month follow up

- All Catamaran study patients at 12 month follow up will receive a CT-scan to assess fusion
- CT results based on independent radiology review
- **Initial study patients (3 subjects) completed CT review in March 2024**
 - **Robust fusion independently assessed in all 3 patients**



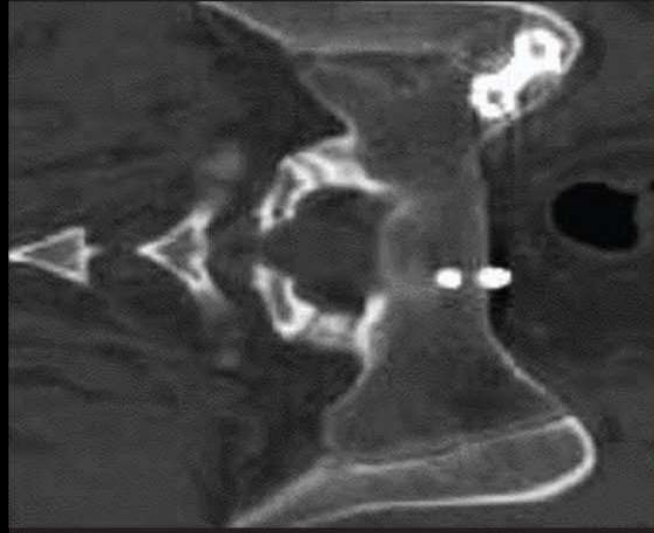
Solid Catamaran Fusion

- 2.5-month CT of a Catamaran case completed by Dr Freeman in Tampa, Florida



Catamaran CT Images

20 Months Post-Op



Image



Current Approaches to SI Joint Fusion

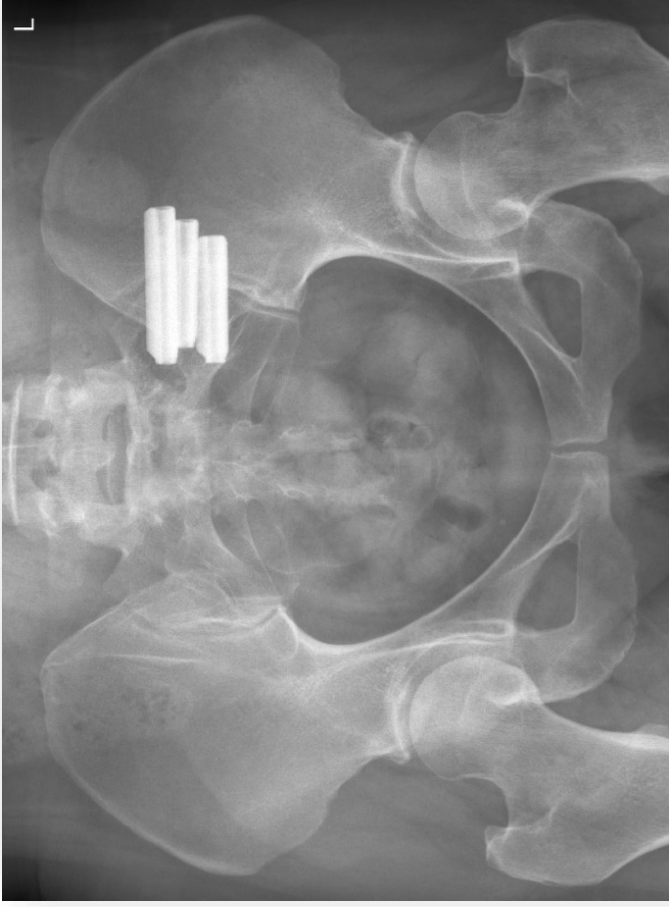


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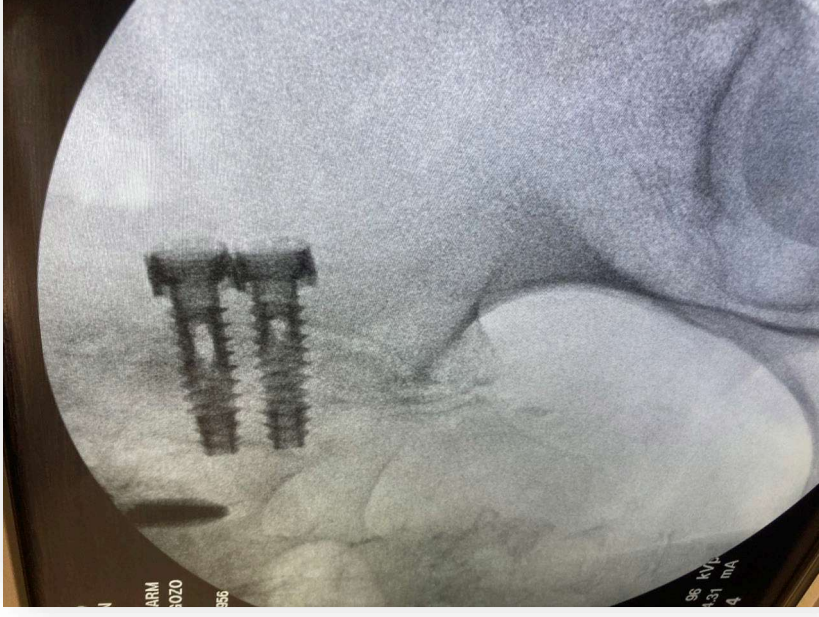
Current Approaches to SI Joint Fusion

1. **Posterior Dorsal Allograft Intra-Articular**
2. **Posterior Inferior Intra-Articular**
3. **Posterior Oblique Screws**
4. **SI Joint Hybrid Intra-Articular & Transfixing Device**
5. **Lateral- Triangle Dowels/Screws**
6. **Posterior Inferior Transfixing Device**

Lateral Approach with triangle implants or screws



iFuse TORQ® are registered trademarks of SI Bone®

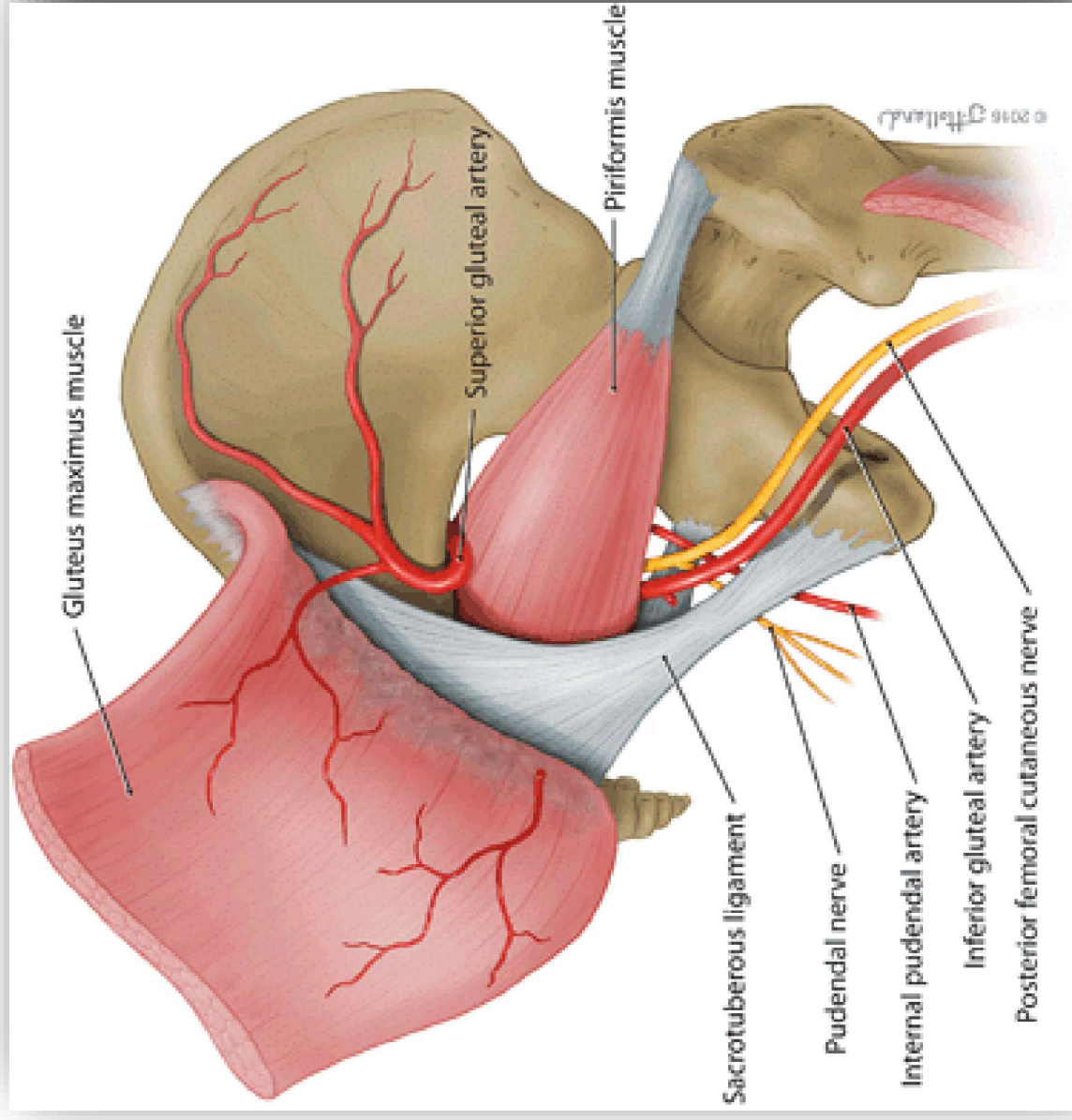


Alevio®



Globus

Vascular Anatomy



Lateral Approach

Relatively safe procedure but is not without certain risks and complications.³

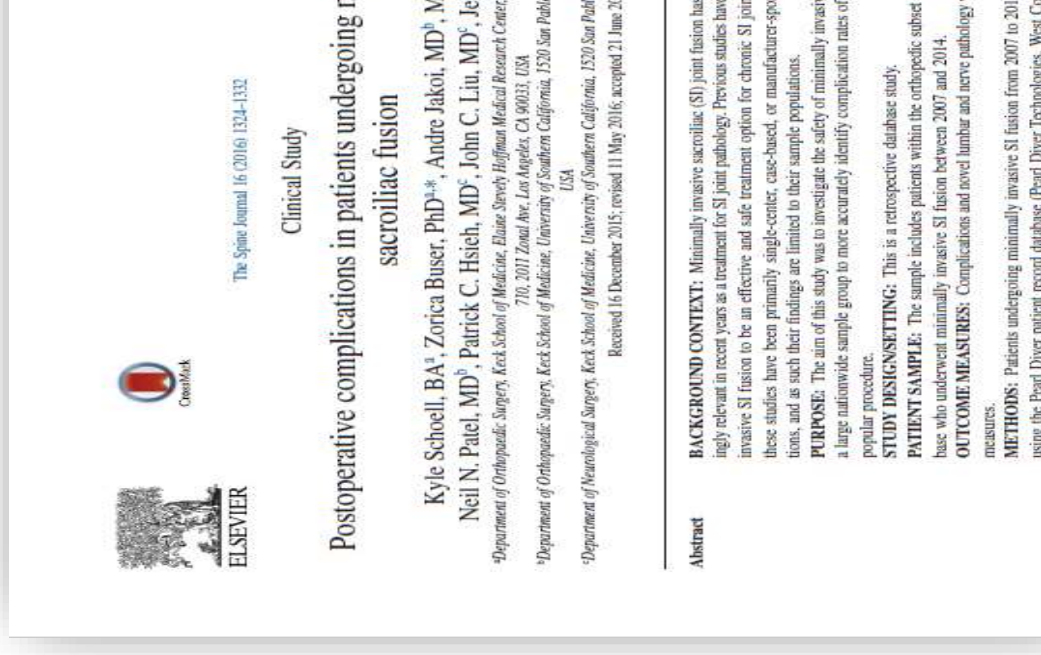
Schoell, et al. 2016:⁴

- Source: Humana Claims Data
- 16.4% Overall Complication Rate at 6 Months

Rahl, et al. 2022:⁵

Manufacturer and User Facility Device Experience (MAUDE) database (2011-2020)

- 1,107 Total Complications (130 per year)
 - 99.5% Used Lateral approach
- Estimated 35% Under-reporting



Lateral Approach – MAUDE Database⁵

Total Complications: N = 1,107 (2011 to 2020)

Complications:

- **97.5%** Resulted in Patient Injury
 - **34%** Impingement & Breeching Neuroforamen

Device Problem:

- **49.5%** Malposition

Root Cause of Device & Patient Injury:

- **58.2%** Technical Error

Overall:

- **92.8%** Required Revision Surgery

PRIMARY RESEARCH

Analysis of Complications in Sacroiliac Fusions Using FDA 510(k) Cleared Devices

Michael D. Rahl, MD, Joseph Weistroffer, MD, and

Design: This was a level III—retrospective cohort study. The objective of this study was to present an unbiased estimate of the current rate of severe complications for Federal Drug Administration (FDA) 510(k) cleared sacroiliac joint (SIJ) fusions and to evaluate the underlying cause of these complications.

Background Data: The number of yearly SIJ fusions has increased over time. Currently, the most utilized implants to date have been FDA 510(k) cleared devices. Studies regarding complications following SIJ fusions are mostly

The prevalence of sacroiliac joint fusions has increased from 2% to 30% over the past 10 years⁵⁻⁸ and has led to an increase in pain generators along with pain generators alone. Pain generators alone can eliminate pain from the spine. The number of pain generators annually accelerated

Each placed implant is an opportunity for misplacement and complication

5. Rahl 2022, 6. Image source: Himpf

Superior Gluteal Artery Injury

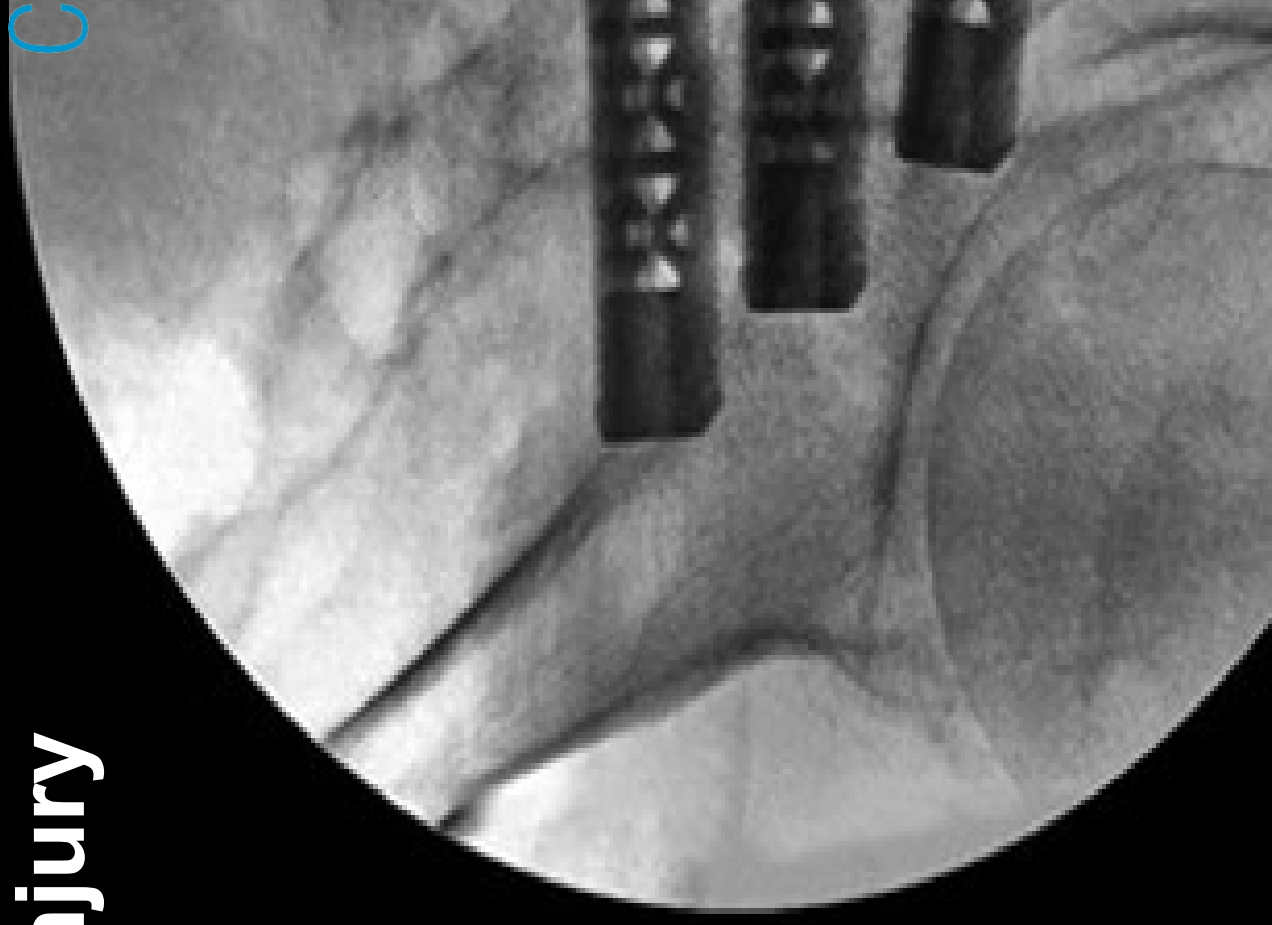
The improper placement has led to injury of the superior gluteal artery.⁵

Maxwell, et. al. reported:⁷

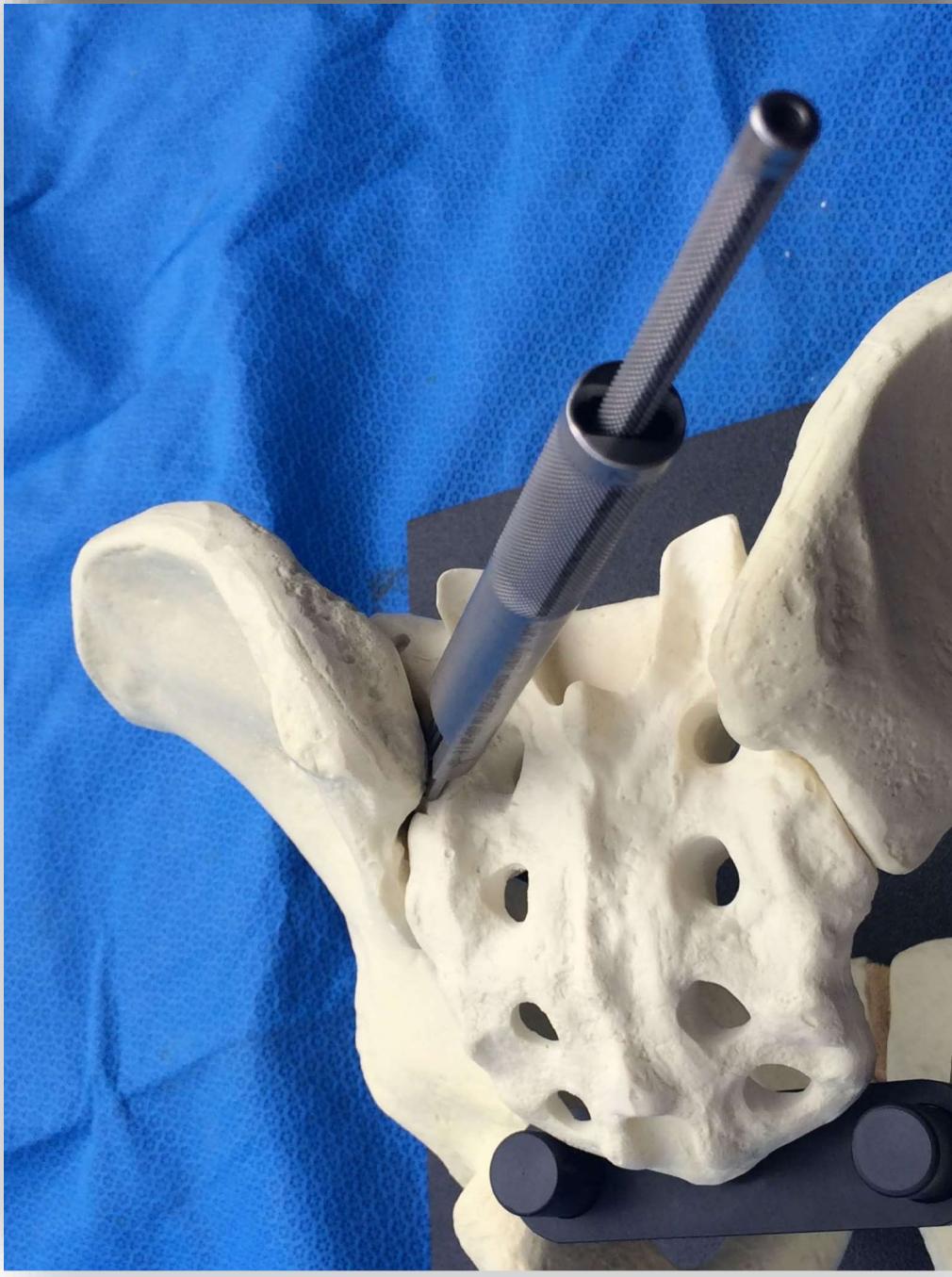
There is a “...lack of literature discussing injury to SGA during minimally invasive SI joint fusion using triangular implants”⁷

Collinge, et. al. reported:⁸

- “18% iliosacral screws caused injury to the superior branch of the superior gluteal nerve and vessels”⁸

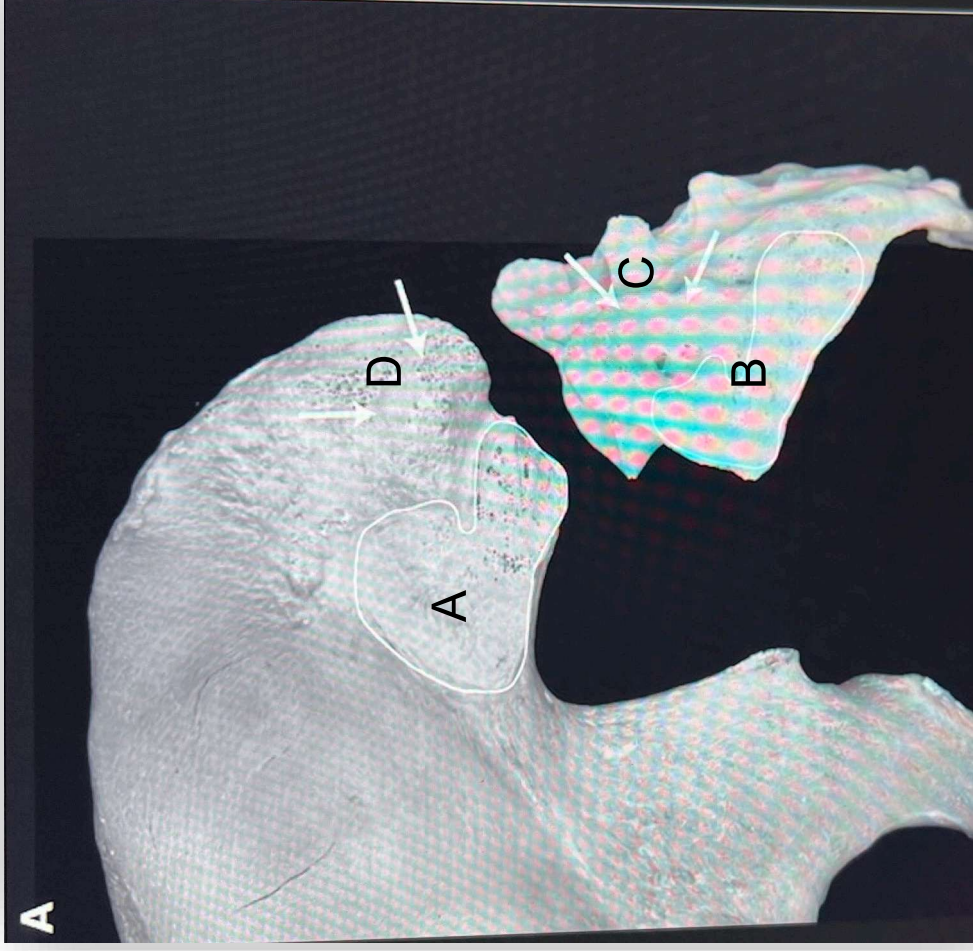


Posterior Intra-articular Approach



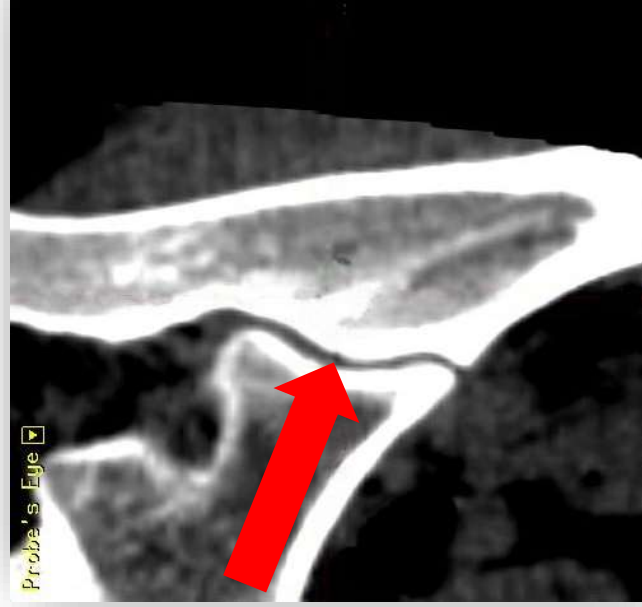
Source: Internet and Surgery for the Painful, Dysfunctional Sacroiliac Joint, A Clinical Guide, Bruce E. Dall, MD; Sonia Eden, MD; Michael D. Rahl, MD; Springer International Publishing, Switzerland, 2015

Dorsal Recess

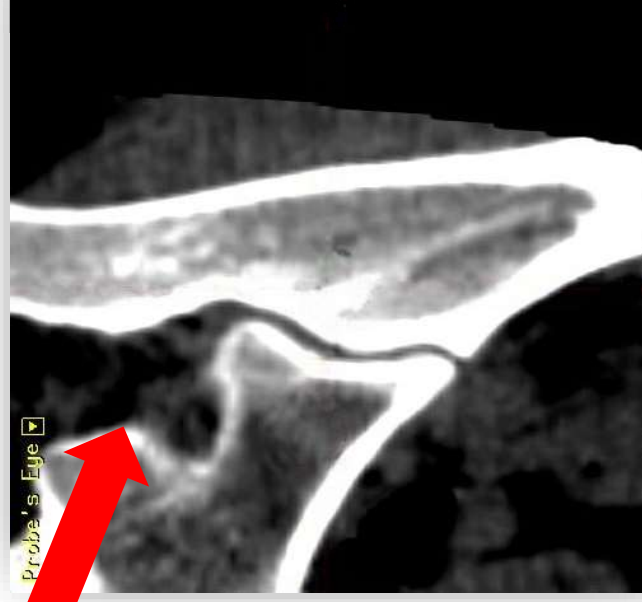


A) Ilium Synovial Joint B) Sacral Surface C) Sacral Recess D) Iliac Recess

Dorsal Recess: Inadequate for SI Fusion



Variable Region Superior to
Articular Surface of SI Joint



Dorsal Recess as Seen
Under Navigation

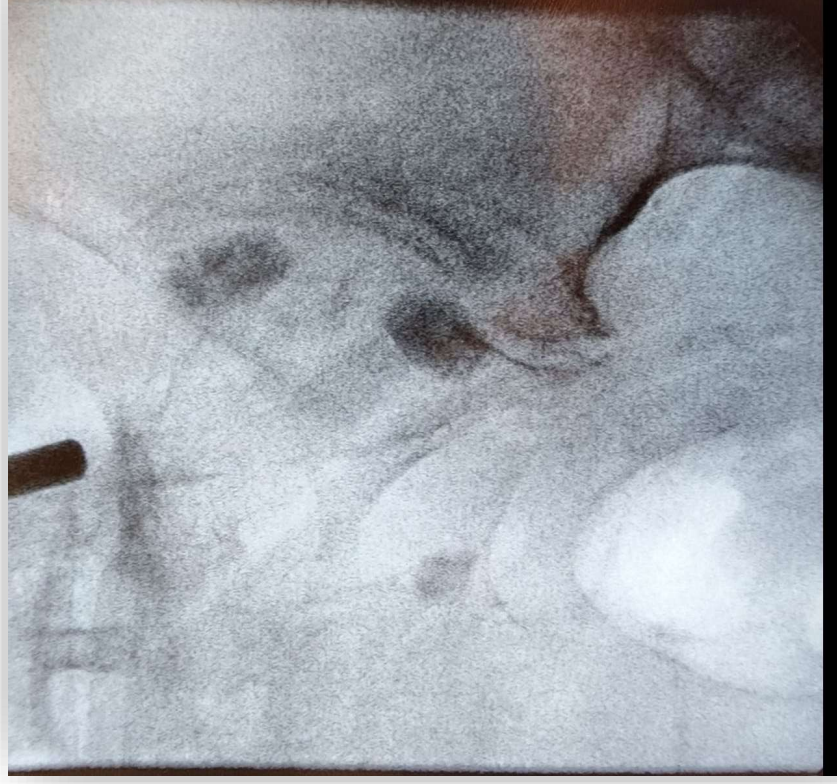


Posterior Oblique Implant
ligamentous portion (Dorsal
SI Joint⁹

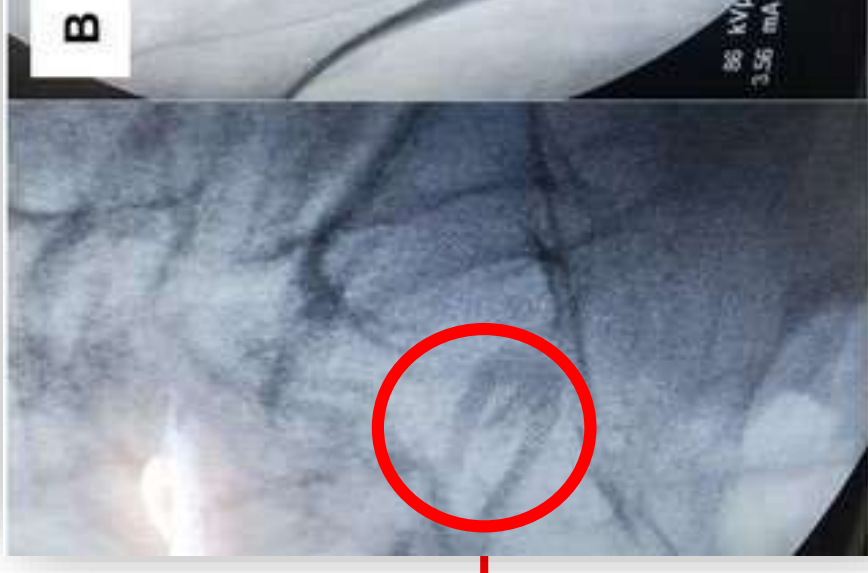
“Implants placed through the ligamentous portion of the joint span a larger intra-articular distance, the chance for bony bridging across the joint and decreasing implant purchase.”⁹

Image source

Posterior Dorsal Allograft



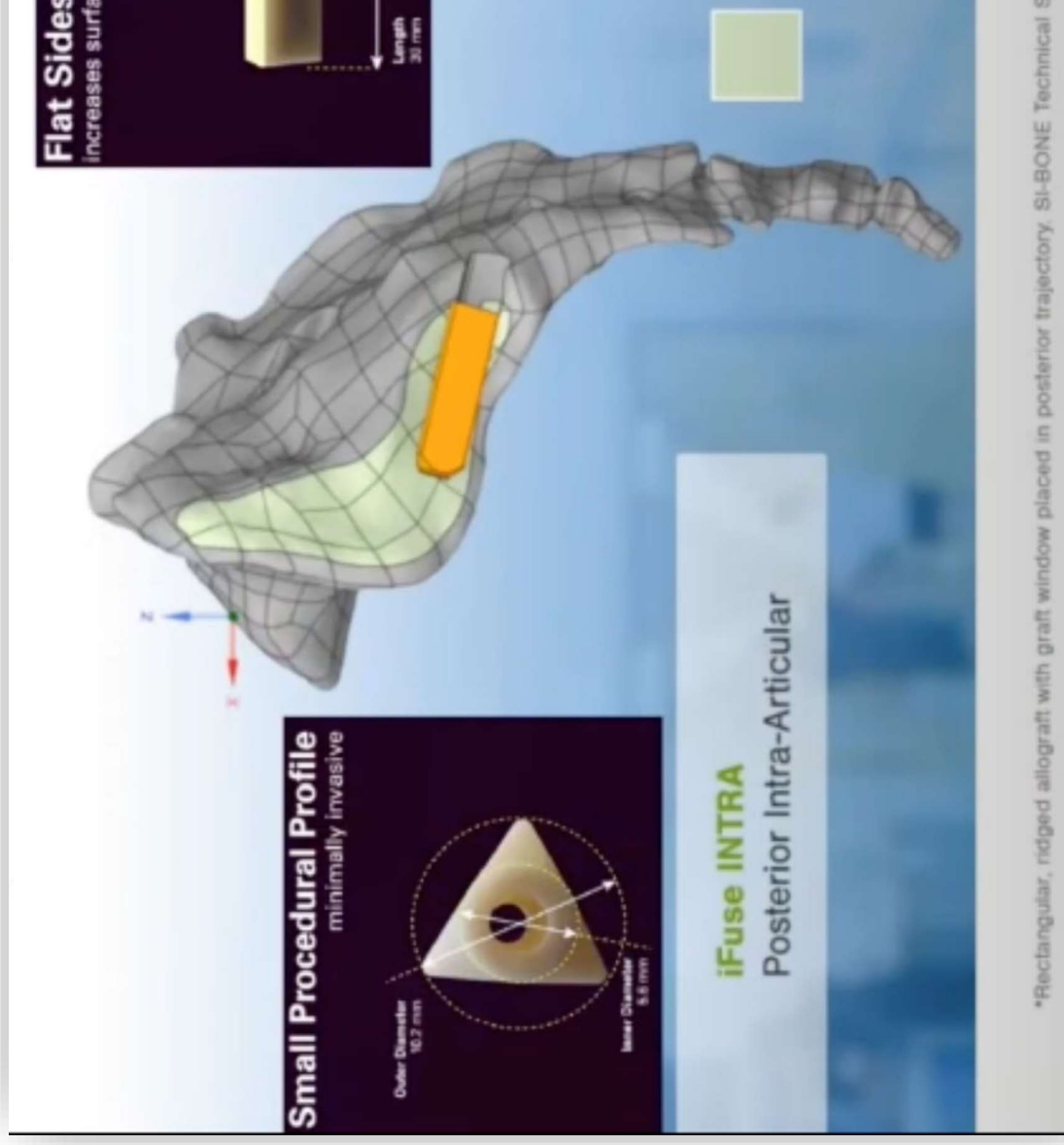
CornerLoc™ Allograft



PainTeq LinQ

SI-Bone-INTRA

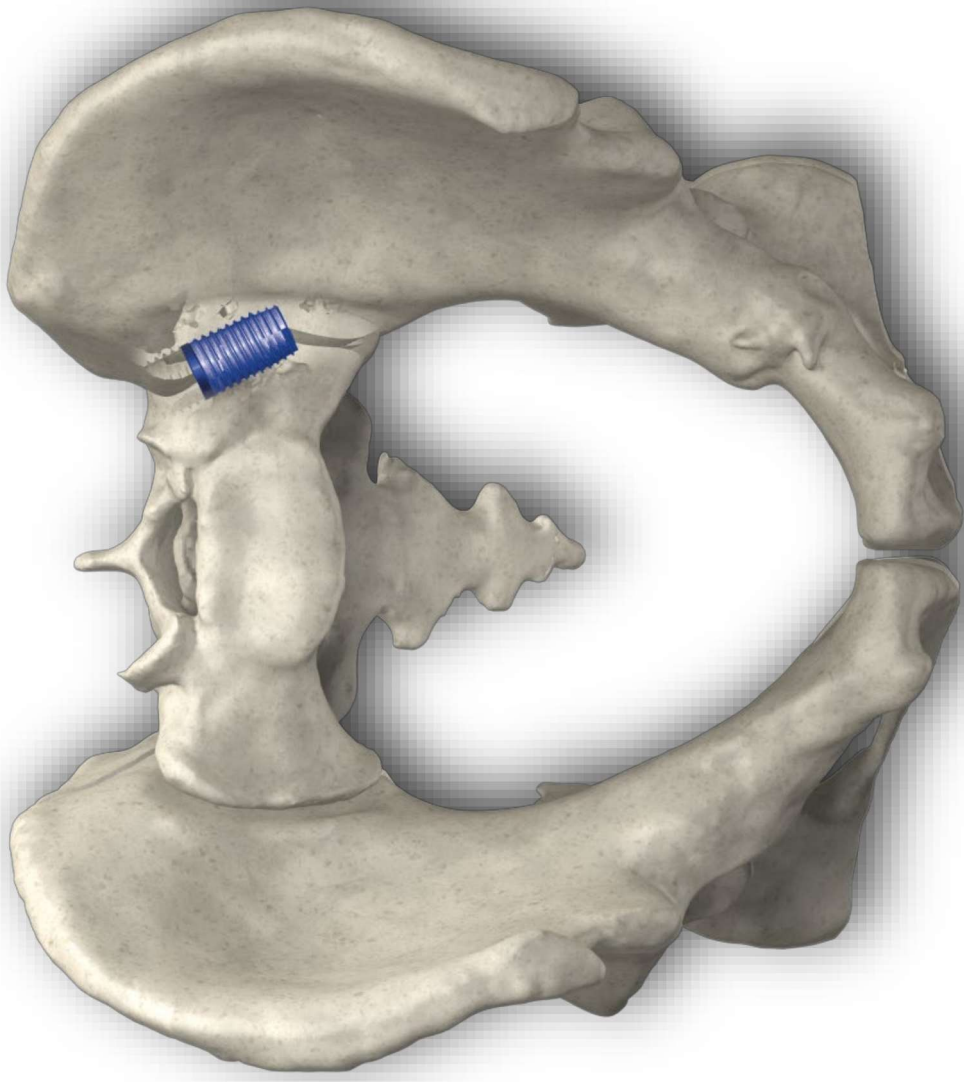
An intra-articular allograft placement



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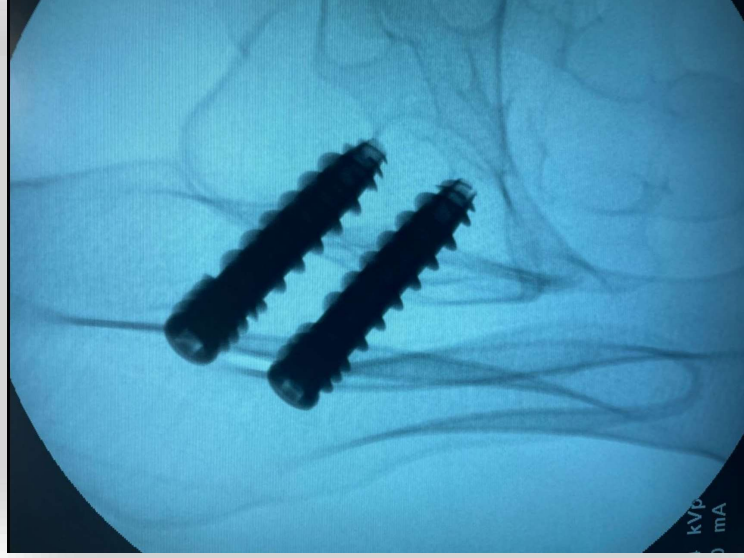
Posterior Metallic Approach

**NADIA® Distraction Interference-Medial to
Lateral Approach**



Posterior Oblique Approach

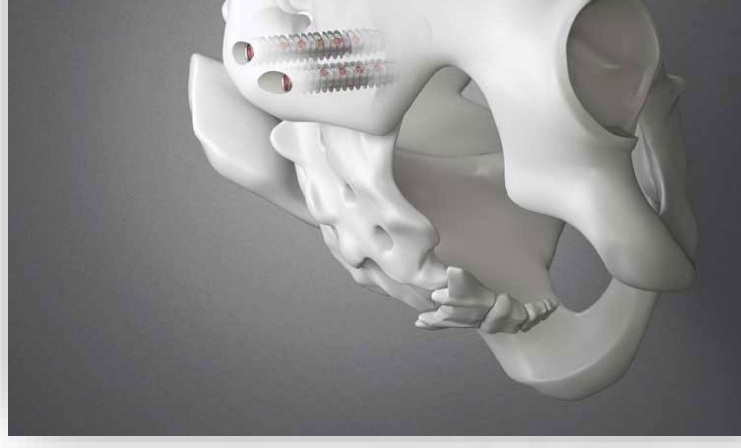
Cutting Edge Spine®



TransLOC 3D
Two-Screw Configuration



Medtronic RIA



Catamaran Targeted & Differentiating SI Joint Opportunities



PRIMARY SI Joint



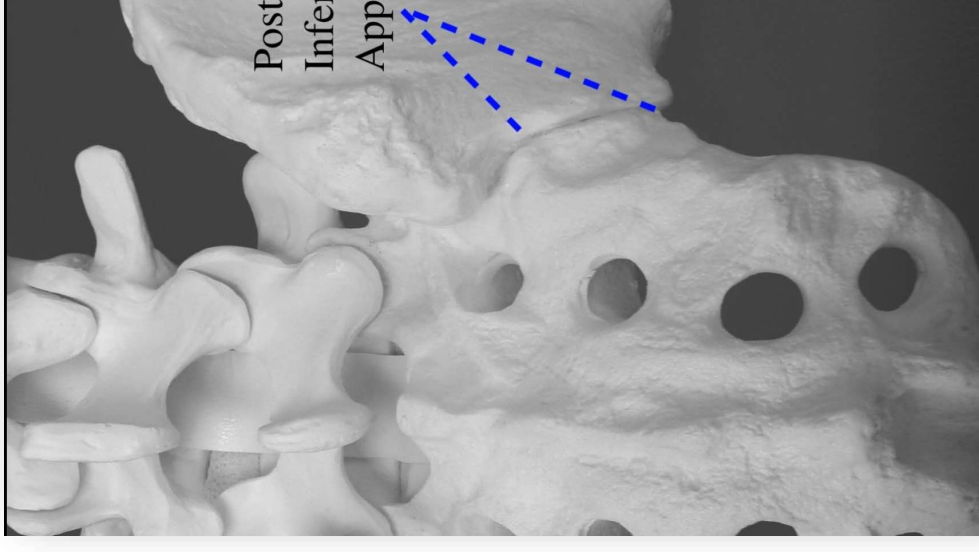
REVISION SI Joint



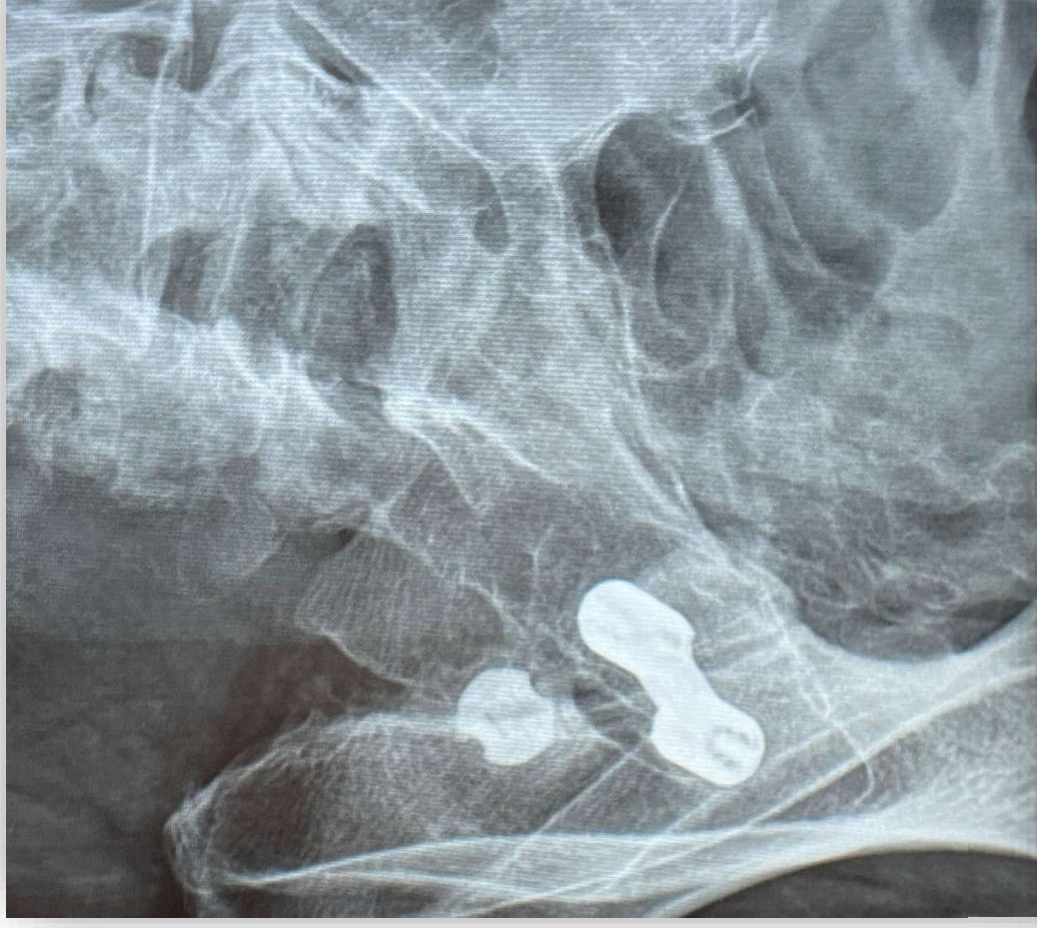
LONG CO

Catamaran Inferior-Posterior Approach Best Suited for Revision Opportunities

- Most failed implants are anatomically superior to entry of Catamaran
- Approach allows for Catamaran to come underneath failed implants
- Placement in the dense bone of the SI Joint to facilitate fusion opportunity
- Opportunity to treat patient a second time to relieve pain



Revision of intra-articular allograft bone dowel implant



Case Study

Failed intraarticular implant revised with Catamaran™ SI Joint Fusion System

Mark Stouffer, MD – St. George Orthopedic Spine, St. George, UT



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Revision of intra-articular allograft bone dowel implant



Case Study

Catamaran® SI Joint Fusion System for Revision of Failed Intra-articular Bone Dowel

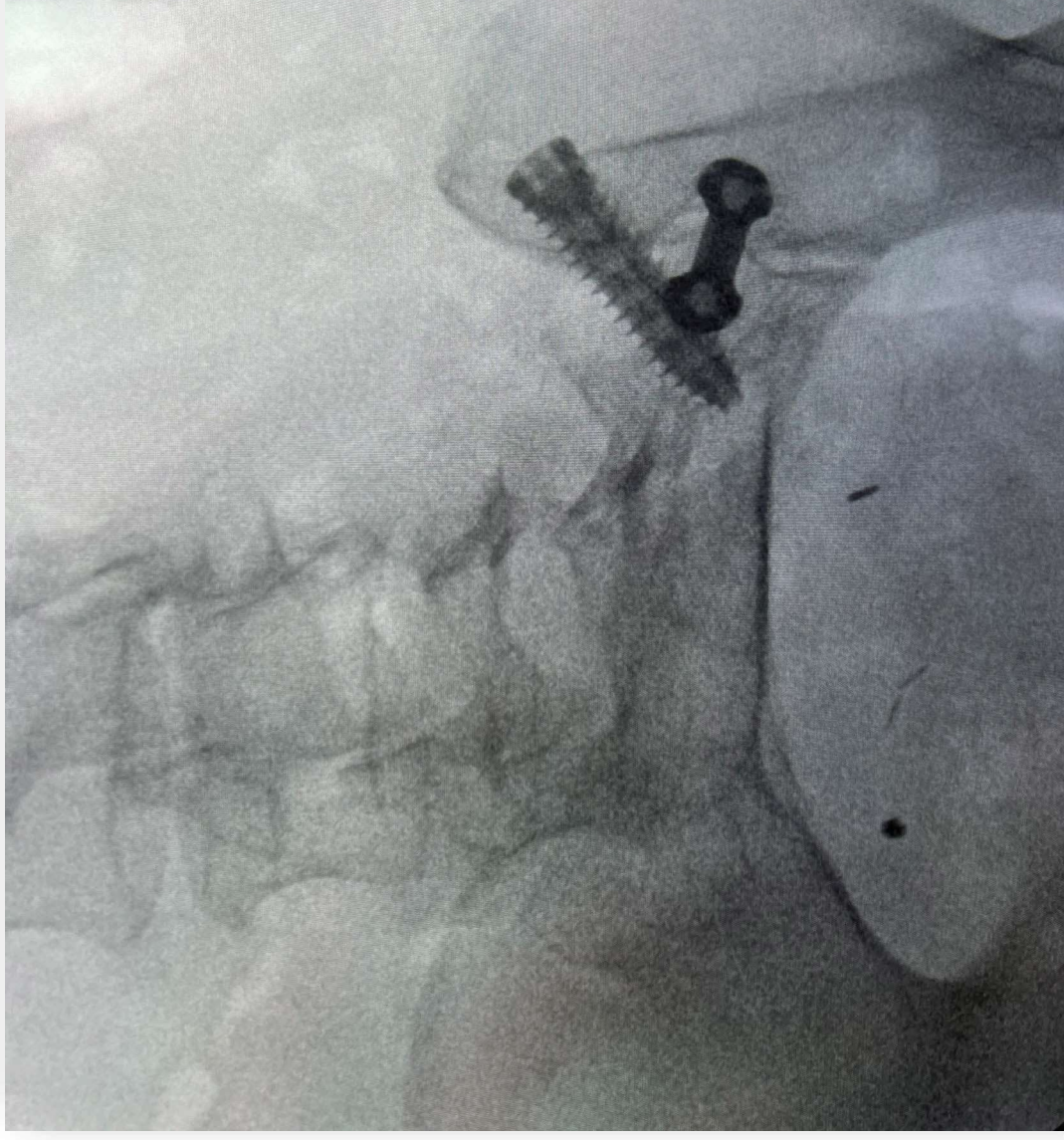
Anne Christopher, MD | St. Louis Pain Consultants | Chesterfield, MO

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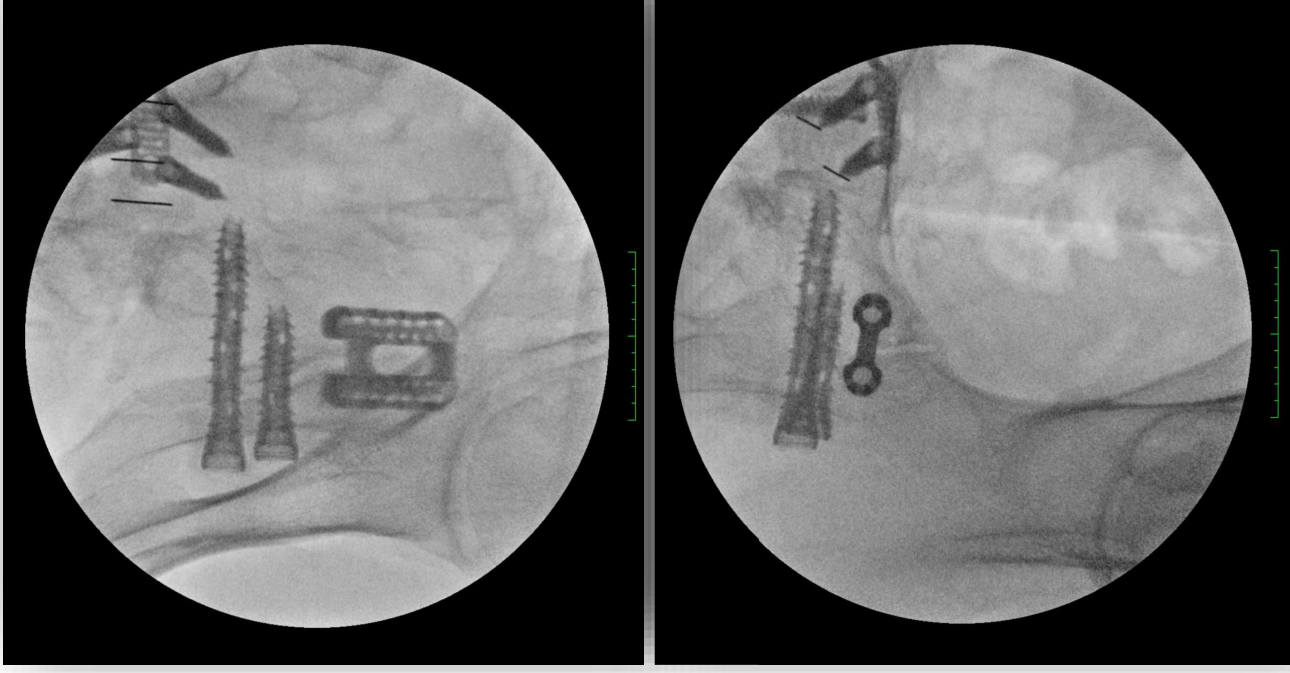
Revision of metallic distraction interference device



Revision of posterior oblique screw



Revision of lateral screws



Saeger 2

Revision of lateral triangular Implants



Catamaran Targeted & Differentiating SI Joint Opportunities



PRIMARY SI Joint



REVISION SI Joint



LONG CON

SI Joint Fusion with Traditional Lumbopelvic Long Construct

- Pelvic fixation can be associated with a high level of mechanical failure
- The SI joint can become a pain generator post pelvic fixation
- Treating the SI joint at the time of pelvic fixation is a consideration
 - Protect S2Al hardware & future SI joint intervention
- Fusion of the SI joint long term is important here

[J Neurosurg Spine](#). 2021 Jun 18;35(3):320-329. doi: 10.3171/2020.11.SPINE201540

Biomechanical effects of a novel posteriorly sacroiliac joint fusion device integrated with traditional lumbopelvic long-construct instrumentation

Bernardo de Andrada Pereira ¹, Jennifer N Lehrman ¹, Anna G U Sawa ¹, Derek P L Scott A Yerby ², Jakub Godzik ³, Alexis M Waguespack ⁴, Juan S Uribe ³, Brian P K

Affiliations + expand

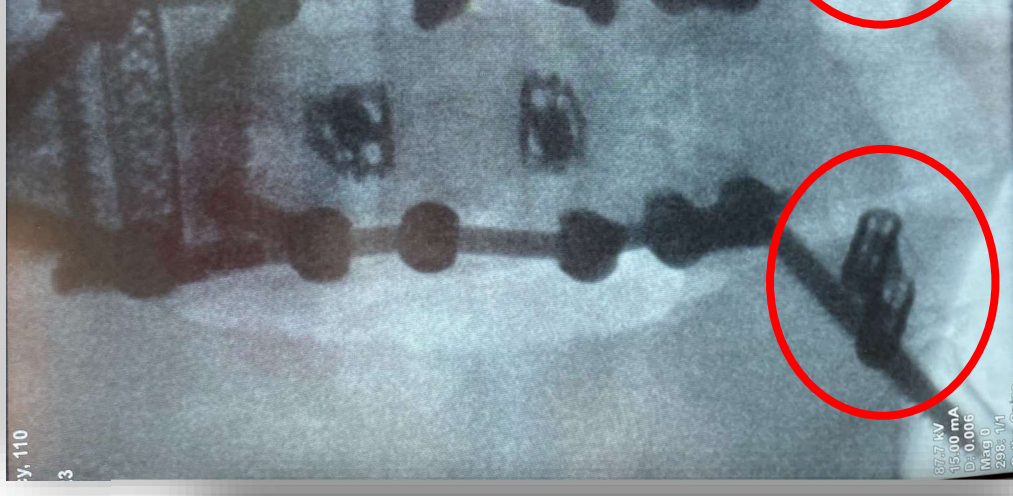
PMID: 34144523 DOI: 10.3171/2020.11.SPINE201540

Abstract

Objective: S2-alar-iliac (S2Al) screw fixation effectively ensures stability and enhances segment constructs. Nevertheless, pelvic fixation is associated with a high rate of migration. Because of the transarticular nature of the S2Al screw, adding a second point of fixation provides additional stability and attenuate strains. The objective of the study was to evaluate the stability and strain with the integration of a sacroiliac (SI) joint fusion device, implanting a novel posterior SI approach, supplemental to posterior long-segment fusion.

Catamaran Adjacent to a Long Construct

Andrew Trontis, MD: Ortho Spine
Community Medical Center: New Jersey



Catamaran Adjacent to a Long Construct

Thomas Freeman, MD: Neurosurgeon
Tampa General Hospital: Tampa, FL

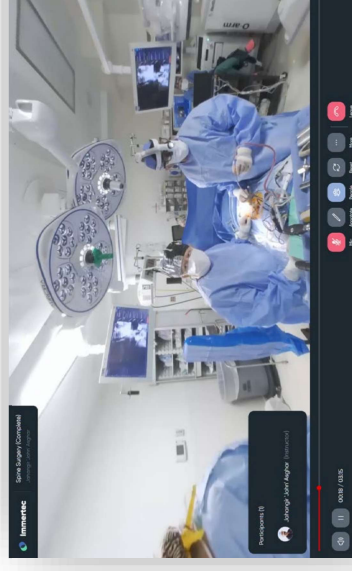


Multiple Catamaran Skill Workshops & Education

Catamaran Implantation & Technique Training



Immersive Procedure Video: MR



Surgical Technique & Imagi

