Arthroscopic Transosseous-Equivalent Repair for Rotator Cuff Tear by Double Anchor Footprint Fixation (DAFF) Technique

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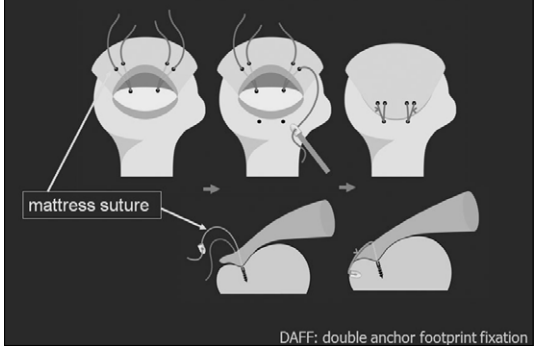
Double anchor footprint fixation (DAFF) technique developed by the author in 2004 is one of modifications for arthroscopic Bankart repair and equivalent to open transosseous suture technique.

Since 2005, I had applied the DAFF technique to the treatment of rotator cuff tear instead of conventional dual-row technique. First, a suture anchor is inserted in the lateral edge of the humeral cartilage, with the sutures passed through the rotator cuff without medial knots. The medial sutures are brought over the cuff and passed through the loop of the lateral anchor (PanalokLoop, Depuy Mitek). The lateral anchor is inserted in 1.0~1.5 cm distal to the lateral drop-off of the greater tuberosity. Finally the sutures are tied non-sliding knots on the hole of the lateral anchor with adjusting tension of the tendon appropriately (Figs. 1-3).

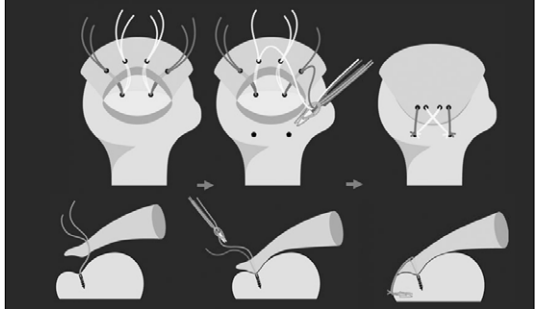
In this talk I would like to show my latest arthroscopic rotator cuff repair by this DAFF technique and compare the structural outcome of dual-row technique and DAFF technique by postoperative MR imaging (Figs. 4-5). Moreover, I will discuss the distinction between DAFF and dual-row and "Suture-Bridge" techniques (Figs. 6-11).

Original DAFF Technique

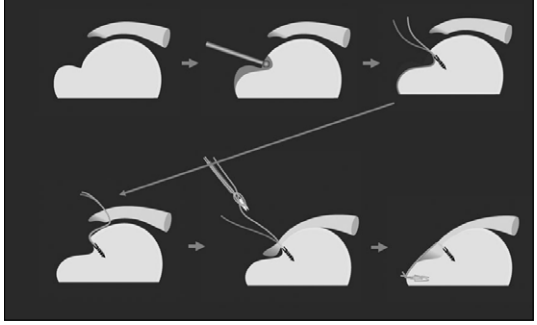


DAFF: double anchor footprint fixation

DAFF Technique II



U-shaped Large Tear (1cm-Approximation)



Postoperative MRI Comparison of the Structural Outcome between Dual-Row Technique and DAFF Technique

Jan 2005 - Dec 2007
41 shoulders

Dual-Row	vs	DAFF
Jan 2005-June 2006		July 2006-Dec 2007
18 shoulders		23 shoulders
Age at op: 63 (41-75)yo		Age at op: 62(42-74)yo
Large tear: 4 cases		Large tear: 8 cases
Medium tear: 14 cases		Medium tear: 15 cases

Results

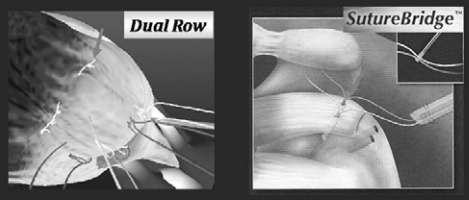
According to Sugaya's MRI Classification

Stage (Postop 6M)	Dual-Row	DAFF
I	2	6
II	7	14
III	5	2
IV	4	1
V	0	0
Retear	4 cases	1 case

Medial Row Knot

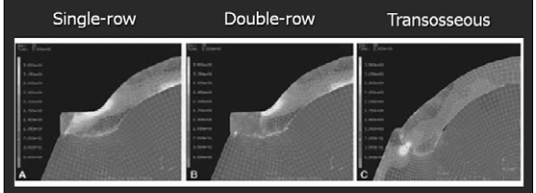
In contrast to dual-row technique or "Suture-Bridge" technique which require medial row knot, neither procedure using DAFF technique needs it.

Demerit of Medial Row Knots



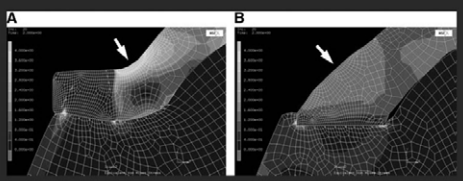
If the medial row knot is tied first, excursion of the tendon is restricted which makes the torn edge of the tendon hard to be pulled out as far as the footprint

Stress Distribution at the Site of Repair in Each Fixation Model at the Muscle Contraction



Sano, H et al: AJSM 2007

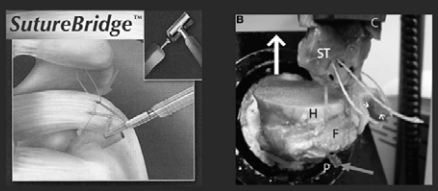
Finite element analysis of rotator cuff fixation technique



Double-row Surface-holding repair technique

Funakoshi T, Suenaga N, et al: JSES 2008, 17:

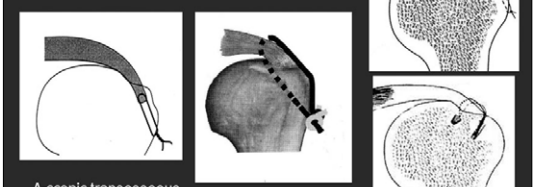
Importance of Medial Row Knots



If without medial row knot, "PushLock" anchors used for lateral knotless fixation are prone to be ejected from the anchor holes due to extreme tension of the sutures directed to the anchors.

Busfield BT et al: AJSM 2008

Various types of ARCR made in Japan



A-scopic transosseous with bone trough technique (Mochizuki, Y)

A-scopic anchorless suture technique (Ishige and Mikasa)

Surface-holding repair technique (Suenaga, N)