stryker

Trident® Tritanium® Acetabular System

Clinical evidence

The Trident Tritanium Clusterhole and Solidback Acetabular shells were launched in 2008, and over 500,000 shells have been implanted worldwide.[1] Listed below are the key papers demonstrating results associated with the Trident Tritanium Solidback and Clusterhole Acetabular shells.

Excellent results of primary THA using a highly porous titanium cup[2]
Naziri et al. Orthopedics. 2013;36(4):e390-e394.

Two-hundred fifty-two patients with Trident Tritanium (Solidback, Clusterhole and Multihole) were reviewed at a mean follow-up of 36 months (range: 24-56 months). Final follow-up reported a mean Harris Hip Score of 91 and no shell loosening or progressive radiolucencies.

Three-year outcomes of a highly porous acetabular shell in primary total hip arthroplasty[3]
Sodhi et al. Orthopedics. 2018;41(1):e154-e157.

Two-hundred fifty-five cases were evaluated in a 12-center study at a mean four-year follow-up. Excellent aseptic survivorship (99.6%), all-cause survivorship (98%) and functional outcomes were found at minimum three-year follow-up. No progressive radiolucencies, loosening, or shielding of the acetabular component were observed at final follow-up.

Comparative survival analysis of porous tantalum and porous titanium acetabular components in total hip arthroplasty[4]
Vutescu et al. Hip International. 27(5):505-508.

A comparative study analyzed survivorship and radiolucencies in Stryker's Trident Tritanium Clusterhole and Multihole shells and Zimmer's Trabecular Metal shells. Trident Tritanium shells utilized in primary cases had 100% survivorship and a 98.6% survivorship rate in revision cases at two-year follow-up. There was no difference between the shells in periacetabular radiolucencies, and both manufacturers' shells had excellent survival at 44.4 months (range: 4.3-91.5 months) when used in primary or revision THA.

Using 18f-fluoride PET/CT-scans to assess longitudinal bone metabolism activity around two different acetabular components after total hip arthroplasty[5]
Peters et al. Presented at: ORS Annual Meeting; March 28-31, 2015; Las Vegas, NV.

18F-fluoride PET/CT-scans used to visualize bone remodeling activity around Tritanium shells were analyzed in 10 THA patients. The results demonstrated good metabolic activity around both Trident and Tritanium shells, with superolateral activity early after surgery. Furthermore, a trend towards larger areas of high bone metabolism values for the Tritanium cup compared to the Trident cup was observed.

X-ray imaging of acetabular shells: do radiolucent lines always correlate to physical gap?[6]
Faizan et al. Orthopaedic Proceedings of the Bone & Joint Journal. 99-B(Supp 3):112.

A cadaveric study used X-ray imaging to compare the three-dimensional metal-to-bone contact between Trident and Trident Tritanium shells. Evaluations of imaging characteristics were then conducted to understand whether X-ray images can reliably predict the metal-to-bone contact or lack of contact. Two inconsistencies were found between the physical section and X-ray of the two shells, which indicated that X-ray imaging technique may influence the appearance of radiolucencies seen around shells. Significant amount of metal-to-bone contact was found over the entire surface of both shells. The authors concluded that radiolucencies on X-ray images may not correspond to gaps on physical sections, especially for Trident Tritanium shells.

National Joint Registry for England, Wales, Northern Ireland and the Isle of Man 16th Annual Report; 2019[7]

Stem:cup brand	N	Median (IQR) age at primary	Percentage (%) males	Time since primary					
				1 year	3 years	5 years	10 years	13 years	15 years
Exeter V40[St] : Tritanium[SL]	4,354	67 (59-74)	45	0.95 (0.70-1.30)	1.63 (1.25-2.11)	2.09 (1.61-2.72)			

KM estimates of cumulative revision (95% CI) of primary hip replacement by stem/cup brand

Australian Joint Registry data[8]

Automated industry report 2648, report generated June 16, 2020. Data period: September 1, 1999 - June 12, 2020.

CPR	1 year	2 years	3 years	4 years	5 years	6 years
Trident/Tritanium (Shell)	1.8 (1.5, 2.1)	2.5 (2.2, 2.9)	2.8 (2.4, 3.2)	3.2 (2.8, 3.7)	3.6 (3.1, 4.1)	4.0 (3.5, 4.5)
Other total conventional hip	1.7 (1.7, 1.8)	2.2 (2.2, 2.3)	2.6 (2.6, 2.7)	3.0 (2.9, 3.0)	3.3 (3.2, 3.3)	3.6 (3.6, 3.7)
CPR	**7 years**	**8 years**	**9 years**	**10 years**	**11 years**	**12 years**
Trident/Tritanium (Shell)	4.3 (3.8, 4.9)	4.6 (4.0, 5.2)	4.9 (4.3, 5.7)	5.1 (4.4, 5.9)		
Other total conventional hip	4.0 (3.9, 4.1)	4.3 (4.3, 4.4)	4.8 (4.7, 4.8)	5.2 (5.1, 5.3)	5.7 (5.6, 5.7)	6.2 (6.1, 6.3)

Yearly cumulative percent revision of primary total conventional hip replacement by model (all diagnoses)

ODEP 10A

ODEP rating: Tritanium Primary Acetabular Shell[9]
Date of first use in Europe: 2009

References

1. Data on file. Stryker sales data; 2019.
2. Naziri Q, Issa K, Pivec R, Harwin SF, Delanois RE, Mont MA. Excellent results of primary THA using a highly porous titanium cup. Orthopedics. 2013;36(4):e390-e394. doi:10.3928/01477447-20130327-10
3. Sodhi N, Izant T, Diana J, et al. Three-year outcomes of a highly porous acetabular shell in primary total hip arthroplasty. Orthopedics. 2018;41(1):e154-e157. doi:10.3928/01477447-20171102-03
4. Vutescu ES, Hsiue P, Paprosky W, Nandi S. Comparative survival analysis of porous tantalum and porous titanium acetabular components in total hip arthroplasty. Hip Int. 2017;27(5):505-508. doi:10.5301/hipint.5000479
5. Peters M, Brans B, Beijer E, Wierts R, ten Broeke R, Arts J. Using 18F-fluoride PET/CT-scans to assess longitundinal bone metabolism activity around two different acetabular components after total hip arthroplasty. Presented at: Orthopaedic Research Society (ORS) Annual Meeting; March 28-31, 2015; Las Vegas, NV
6. Faizan A, Chuang P, Aponte C, Sharkey PF. X-ray imaging of acetabular shells: do radiolucent lines always correlate to physical gap? Bone Joint J:Orthop Proc. 2018;99-B(Supp 3):112
7. National Joint Registry for England, Wales and Northern Ireland and Isle of Man. 16th Annual Report. 2019
8. National Joint Replacement Registry. Hip, Knee & Shoulder Arthroplasty Annual Reports. Australian Orthopaedic Association. Automated industry report 2648; report generated June 16, 2020; Data period: September 1, 1999 – June 12, 2020
9. Tritanium Primary Acetabular Shell. Orthopaedic Data Evaluation Panel (ODEP). http://www.odep.org.uk/product.aspx?pid=205

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