Appendix 1 - Scoring system based on a comparison between PDO implants and non PDO implants or repair.

Outcomes				Score
Safety	**Surgical Site Infection (SSI)**	Reported no SSI in PDO group		2
		Reported SSI in PDO group:		
			SSI rates lower in PDO group	1
			Similar rates of SSI	0
			SSI rates higher in PDO group	-2
		Not commented / not assessed		-
	Inflammatory reaction	Reported no inflammatory reaction in PDO group		2
		Reported inflammatory reaction in PDO group:		
			Lower inflammatory reaction in PDO group	1
			Similar inflammatory reaction	0
			Higher inflammatory reaction in PDO group	-2
		Not commented / not assessed		-
	Foreign body reaction	Reported no foreign body reaction in PDO group		2
		Reported foreign body reaction in PDO group:		
			Foreign body reaction is lower in PDO group compared to non PDO group	1
			Foreign body reaction is similar in all groups	0
			Foreign body reaction is higher in PDO group compared to non PDO group	-2
		Not commented / not assessed		-
	Postoperative fever	Reported no postoperative fever in PDO group		2
		Reported postoperative fever in PDO group:		
			Postoperative fever rate lower in PDO group	1
			Similar rates of postoperative fever	0
			Postoperative fever rate higher in PDO group	-2
		Not commented / not assessed		-
	Postoperative Pain	Reported no pain in PDO group		2
		Reported postoperative pain in PDO group:		
			Postoperative pain scores lower in PDO group	1
			Similar postoperative pain scores	0
			Postoperative pain scores higher in PDO group	-2
		Not commented / not assessed		-
Performance		Performance of medical device assessed in PDO group/device(s):		
			PDO device performs as expected and with better performance than comparative device	2
			PDO device performs as expected and similarly as comparative device	0
			PDO device performs as expected but performance of comparative device is better	-1
			PDO device fails to meet expected performance	-2
		Not commented / not assessed		-

Appendix 2 - Scoring system based on percentage of unfavourable outcomes in the analysed population in each publication.

Outcomes			Score (%)
Unfavourable Outcomes (UO)	**Surgical Site Infection (SSI)**	SSI is commented or assessed	Patients with SSI
		Not commented / not assessed	-
	Inflammatory reaction	Inflammatory reaction is commented or assessed	Patients with inflammatory reaction
		Not commented / not assessed	-
	Foreign body reaction (FBR)	FBR is commented or assessed	Patients with FBR
		Not commented / not assessed	-
	Postoperative fever	Postoperative fever is commented or assessed	Patients with postoperative fever
		Not commented / not assessed	-
	Postoperative Pain	Postoperative pain is commented or assessed	Patients with postoperative pain
		Not commented / not assessed	-
Performance		Performance is commented or assessed	Successful performance
		Not commented / not assessed	-

Safety score (%) is calculated as 100 – (average of UO)

Appendix 3 - List of PDO implants approved by the FDA via 510(k) route.

510(k) Number	Type of Implant	Medical Device Brand Name	Company	Country	Approval Year	Regulation Medical Specialty
K812323	Clip	PDS* ABSORBABLE LIGATING CLIPS	Ethicon, Inc	USA	1981	General & Plastic Surgery
K844228	Mesh	PDS POLYDIOXANONE MESH	Ethicon, Inc.	USA	1985	General & Plastic Surgery
K864912	Pin	PDS (POLYDIOXANON) ABSORBABLE PIN	Johnson & Johnson Professionals, Inc.	USA	1987	Orthopaedic
K901456	Pin	ORTHOSORB® ABSORBABLE PIN	Johnson & Johnson International	USA	1990	Orthopaedic
K931492	Clip	LAPRA-TY* SUTURE CLIP	Ethicon, Inc.	USA	1993	General & Plastic Surgery
K970119	Staple	MITEK ABSORBABLE POLYDIOXANONE (PDS) H FIX	Mitek Products	USA	1998	Orthopaedic
K013274	Suture	MONO-DOX	Cp Medical	USA	2001	General & Plastic Surgery
K022666	Suture	PDO (POLYDIOXANONE) MONOFILAMENT SYNTHETIC ABSORBABLE SUTURE U.S.P.	Arc Medical Supplies (Beijing) Co, Ltd.	China	2002	General & Plastic Surgery
K030212	Suture	MONODEK	Genzyme Biosurgery	USA	2003	General & Plastic Surgery
K031216	Suture	MONOPLUS	Aesculap	USA	2003	General & Plastic Surgery
K031443	Suture	*SEW-RIGHT* Quick Load with 2-0 MONOGLIDE	Lsi Solutions	USA	2003	General & Plastic Surgery
K041048	Suture	ATRAMAT	Internacional Farmaceutica, S.A. De C.V.	Mexico	2004	General & Plastic Surgery

K042075	Suture	QUILL	Quill Medical, Inc.	USA	2004	General & Plastic Surgery
K042285	Suture	UNICRYL M	United Medical Industries Co. Ltd.	Kingdom of Saudi Arabia	2004	General & Plastic Surgery
K042517	Screw	BIOSORB FX AND BIOSORB PDX 1.5 AND 2.0 SCREWS	Linvatec Biomaterials, Ltd	Finland	2004	Dental
K051609	Suture	QUILL SYNTHETIC ABSORBABLE BARBED SUTURE	Quill Medical, Inc.	USA	2005	General & Plastic Surgery
K053380	Suture	CONTOUR THREAD SYNTHETIC ABSORBABLE PDO BARBED SUTURE	Surgical Specialties Corp.	USA	2006	General & Plastic Surgery
K061037	Suture	PDS PLUS ANTIBACTERIAL SUTURE	Ethicon, Inc.	USA	2006	General & Plastic Surgery
K063680	Suture	SHARPOINT PDO (POLYDIOXANONE) SUTURES	Surgical Specialties Corp.	USA	2007	General & Plastic Surgery
K071989	Suture	QUILL SELF-RETAINING SYSTEM (SRS) SYNTHETIC ABSORBABLE SURGICAL SUTURE MATERIAL	Surgical Specialties Corp.	USA	2007	General & Plastic Surgery
K080680	Suture	QUILL SELF-RETAINING SYSTEM (SRS) COMPRISED OF PDO	Surgical Specialties Corp.	USA	2008	General & Plastic Surgery
K080985	Suture	QUILL SELF-RETAINING SYSTEM (SRS) COMPRISED OF POLYDIOXANONE (PDO)	Surgical Specialties Corp.	USA	2008	General & Plastic Surgery
K081001	Suture	PD SYNTH	Sutures India Pvt., Ltd.	India	2008	General & Plastic Surgery
K082097	Suture	DemeTech POLYDIOXANONE SYNTHETIC MONOFILAMENT (PDO) ABSORBABLE SUTURE	Demetech Corp	USA	2010	General & Plastic Surgery
K092590	Plate	PDS Flexible Plates	Ethicon, Inc.	USA	2010	General & Plastic Surgery
K100461	Suture	PDM	Riverpoint Medical	USA	2010	General & Plastic Surgery
K100780	Suture	Polydioxanone Suture (Vital Sutures)	Unilene S.A.C.	USA	2010	General & Plastic Surgery
K113004	Suture	PDS™ BARBED SUTURES	Ethicon, Inc.	USA	2011	General & Plastic Surgery

K113744	Suture	QUILL PDO KNOTLESS TISSUE-CLOSURE DEVICE (POLYDIOXANONE)	Angiotech	USA	2012	General & Plastic Surgery
K120827	Suture	QUILL PDO KNOTLESS TISSUE-CLOSURE DEVICE	Angiotech	USA	2012	General & Plastic Surgery
K123877	Suture	QUILL PDO KNOTLESS TISSUE-CLOSURE DEVICE, VARIABLE LOOP DESIGN	Angiotech	USA	2013	General & Plastic Surgery
K130191	Suture	MINT (MINT Lift)	Hansbiomed Corporation	Korea	2013	General & Plastic Surgery
K132268	Suture	QUILL PDO KNOTLESS TISSUE-CLOSURE DEVICE	Angiotech	USA	2013	General & Plastic Surgery
K133420	Suture	TRANQUILL BARBED DEVICE	Angiotech	USA	2013	General & Plastic Surgery
K132669	Staple	PROXIFAST ABSORBABLE STAPLE	Surgimatix, Inc.	USA	2014	General & Plastic Surgery
K141776	Suture	STRATAFIX	Ethicon, Inc.	USA	2014	General & Plastic Surgery
K143413	Suture	Y. Jacobs YOUNG'S Thread	Y. Jacobs Medical, Inc.	Korea	2015	General & Plastic Surgery
K150670	Suture	STRATAFIX Spiral PDS Plus Knotless Tissue Control Device	Ethicon, Inc.	USA	2015	General & Plastic Surgery
K150553	Suture	Filbloc	Assut Europe	Italy	2016	General & Plastic Surgery
K160705	Suture	Y.JACOBS YOUNG'S THREAD Synthetic Absorbable Surgical Fixation Suture	Y. Jacobs Medical, Inc.	USA	2016	General & Plastic Surgery
K160761	Suture	DW-1C	Dongwon Medical Co., Ltd.	Korea	2016	General & Plastic Surgery
K161737	Suture	RELI REDIDIOX Dyed, RELI REDIDIOX, RELI REDIDIOX Undyed	Myco Medical	USA	2017	General & Plastic Surgery
K172659	Suture	FILAXYN Absorbable Polydioxanone Surgical	Meril Endo Surgery Private Limited	India	2017	General & Plastic Surgery
K181094	Mesh	Polydioxanone Surgical Scaffold™	Surgical Innovation Associates, Inc	USA	2018	General & Plastic Surgery

K173917	Suture	neoClose PDS Anchor	neoSurgical Ltd.	Ireland	2018	Gastroenterology / Urology
K173874	Suture	Stitch Kit® Quill PDO	Origami Surgical LLC	USA	2018	General & Plastic Surgery
K182873	Suture	STRATAFIX™ Symmetric PDS™ Plus Knotless Tissue Control Device, STRATAFIX™ Spiral PDS™ Plus Knotless Tissue Control Device	Ethicon, Inc.	USA	2019	General & Plastic Surgery

PMA N18331
PDS™ II Suture
(1982)

K041048
Atramat®
Synthetic
Absorbable Suture
(2004)

K063680
Sharpoint® PDO
Synthetic
Absorbable
Suture
(2007)

K013274
Mono-Dox
Synthetic
Absorbable Suture
(2001)

K022666
PDO Monofilament
Synthetic Absorbable
Suture
(2002)

K031443
Sew-Right® Quick
Load® with
Monoglide™
(2003)

K082097
DemeTECH
Synthetic PDO
Monofilament
Absorbable Suture
(2010)

K030212
Monodek™ Synthetic
Absorbable Surgical
Suture
(2003)

K042075
Quill™
Synthetic
Absorbable
Barbed
Suture
(2004)

K973313
Y-Knot
Suture Clip
(1997)

K024117
Insorb
Absorbable
Staples
(2003)

K050548
Contour Midface
Opposing Uni-
directional
Threads
(2005)

K071989
Quill™ Self-
Retaining (SRS)
comprised of
PDO
(2007)

K051609
Quill® Synthetic
Absorbable
Barbed Suture
(2005)

K080680
Quill™ Self-
Retaining (SRS)
comprised of PDO
(2008)

K082662
V-Loc 180 Absorbable
Wound Closure Device
(2009)

K031216
MonoPlus PDO
Monofilament
Absorbable
Surgical Suture
(2003)

K080985
Quill™ Self-
Retaining (SRS)
comprised of
PDO
(2008)

K053380
Contour Thread™
Synthetic
Absorbable PDO
barbed suture
(2006)

K113744
Quill™ PDO
Knotless-Tissue
Closure Device
(2012)

K120827
Quill™ PDO
Knotless Tissue-
Closure Device
(2012)

K133420
TranQuill
Barbed Device
(2013)

K130191
MINT™
(2013)

K123877
Quill™ PDO
Knotless-Tissue
Closure Device,
Variable Loop
Design
(2013)

K113004
PDS™ Barbed
Suture
(2011)

K090159
INSORB
Absorbable Staple
(2009)

K132268
Quill™ PDO Knotless-
Tissue Closure Device,
Variable Loop Design
(2013)

K132669
Proxifast absorbable
staple
(2014)

K160761
Dw-1c
(2016)

K150670
Stratafix™ Spiral PDS™
Plus Knotless Tissue
Control Device
(2015)

K160705
Y Jacobs Young's
Synthetic Absorbable
Surgical Fixation Suture
(2016)

K173874
Stitch Kilt® Quill
PDO
(2018)

K182873
STRATAFIX™ Symmetric PDS™
Device, STRATAFIX™ Spiral PDS™
Plus Knotless Tissue Control Device
(2019)

?

K042285
UniCryl M
(2004)

K081001
PD Synth
(2008)

K150553
Filbloc
(2016)

Stratafix™ Symmetric PDS™
Plus Knotless Tissue Control
Device

K141776
Stratafix™ Symmetric PDS™
Plus Knotless Tissue Control
Device
(2014)

K032420
Modified
Vicryl* Plus
Antibacterial
Suture
(2003)

K050845
Monocryl* Plus
Antibacterial
Suture
(2003)

K061037
PDS* Plus
Antibacterial Suture
(2006)

K100461
PDM
(2010)

Acufex "T"
fix device

K970119
Mitek Absorbable
"H" device
(1998)

K954382
Silmax
Sheeting
(1995)

K992158
Lactosorb
Sheets
(1999)

?

K901456
Orthosorb
(1990)

K012769
MacroPore ENT
Reconstruction Film
(2001)

K092590
PDS Plates
(2010)

?

K812323
Absolok
(1981)

?

K844228
PDS Mesh
(1985)

?

K864912
PDS Absorbable
Pin
(1987)

?

K931492
Lapra-Ty
(1993)

?

K100780
Vital Sutures
(2010)

?

K143413
J+PRAS YOUNG'S
Thread
(2015)

?

K161737
Reli Redidiox
(2017)

K982721
BioSorb™ FX 2.0 / 2.4
(1999)

K011569
BioSorb™ FX OM 2.0 / 2.4
(2002)

K982139
BioSorb™ FX 1.5 / 2.0
(1998)

K000836
BioSorb™ PDX
(2000)

K042517
BioSorb Fx and PDX
(2004)

K150717
Megasorb, Mitsu,
Mitsu FST, Filaxyn,
Filapron
(2015)

K172659
FILAXYN
Absorbable
Poydioxanone
Surgical
(2017)

K081366
Kumar T-Anchors
Hernia Set
(2008)

K142903
NeoClose 2 AutoAnchor Pack
US, NeoClose 4 AutoAnchor
Pack US
(2014)

K173917
neoClose PDS
Anchor
(2018)

K092224
TIGR Surgical Mesh,
Model WK-6
(2010)

K181094
Polydioxanone
Surgical Scaffold™
(2018)

Colour legend:

Undisclosed predicate
PDO Suture
PDO Plate / Mesh
PDO Clip / Staple
PDO Screw / Pin
Unknown or Non PDO material

Appendix 5 – Basic characteristics of the different types of PDO implants

PDO medical devices can be divided into four categories based on their shape: sutures, plates or meshes, screws or pins, and staples or clips.

Sutures can be categorised as monofilaments (only one strand) or multifilaments (more than one strand assembled together, either twisted or braided). Barbed sutures are a subcategory of monofilaments that have several barbs distributed over their length to provide better tissue attachment, while avoiding tissue retraction. When compared to smooth monofilament sutures of the same size, barbed sutures have a reduced tensile strength.[66] As an example, with regards to PDO medical devices, PDS™ II is considered as a monofilament suture, whereas Stratafix™ is considered a barbed suture. Both are manufactured by Ethicon Inc.

Plates or meshes are medical devices with a high surface area that provide mechanical support to tissues or organs during healing. Mesh fibre pattern, effective porosity and surface hydrophilicity are relevant to the biological tissue response and biocompatibility.[67] Scarring reactions/fibrosis can be found after incorporation of meshes into tissues, resulting from the surgical trauma during implantation or biological reaction post-surgery. Pore size should be considered when designing meshes as small pores are usually filled with inflammatory infiltrate or dense fibrotic scar, while large pores are filled with local physiological tissues once the mesh is implanted. Thus, large-pore meshes usually show less inflammation and fibrosis than small-pore meshes.[67] Mesh design should be suitable for the desired clinical application to avoid mesh-related adverse side effects and compromising clinical outcomes, by causing chronic pain, bacterial infection, restricted mobility or mesh migration, when implanted in a tissue with increased inflammation.[67] PDS™ Plate is a PDO plate manufactured by Ethicon Inc. This plate is commercialised as perforated or unperforated in different sizes and is mainly used in nasal reconstruction surgeries.

Polymer-based screws and pins are fixation devices that can overcome the issues seen with metallic screws including corrosion and patients with metal sensitivity. Additionally, when using absorbable screws or pins instead of metallic devices, the slow absorption process (more than six months) ensures secure fixation of the tissue throughout the healing process until it is no longer needed. An example of a PDO pin is OrthoSorb® (Johnson & Johnson International).

For a fast wound closure, clips or staples can be used either on their own or to secure sutures in place. Surgical staples are used when a good cosmetic closure is not a requirement. Typically, a surgeon inserts the two prongs of the staple through the tissue and then bend the staple prongs inward, grasping and securing the edges. Clips can be used to secure sutures in place by clamping it at the suture's end, next to the tissue, preventing the suture from pulling through the tissue. Clips and staples usually have small dimensions when compared to the other medical device categories referred to here. Lapra-Ty® clips (Ethicon Inc.) are purple clips made of PDO.

Supplementary Data 1 - Safety and performance scores for PDO implants found in literature.

Outcomes	Monofilament/Multifilament PDO sutures												
	Hehl et al.[1]	**Murtha et al.**[2]	**Baracs et al.**[3]	**Justinger et al.**[4]	**Diener et al.**[5]	**Tan-Kim et al.**[6]	**Brolin**[7]	**Ulman et al.**[8]	**Seiler et al.**[9]	**Bloemen et al.**[10]	**Albertsmeier et al.**[11]	**Bassi and Tulandi**[12]	**Timmermans et al.**[13]
1. Surgical Site Infection	0.0	3.3	12.5	8.5	15.0	-	0.0	0.0	17.3	7.7	11.3	0.7	13.1
2. Inflammatory reaction	12.0	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	19.7	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	0.0	-
5. Postoperative Pain	-	-	-	-	-	0.0	-	-	-	-	-	-	-
PDO device(s)	PDS™ II	PDS™ II	PDS™ Plus / PDS® II	PDS™ Plus / PDS® II	PDS™ Plus / PDS® II	PDS™ II / Monodek™	PDS™	PDS™	MonoPlus® / PDS™ II	PDS™	MonoPlus® / PDS®	PDS™	MonoPlus®
Number of patients	33	61	485	865	1185	32	120	61	415	233	141	139	107
Unfavourable Outcomes	6.0	11.5	12.5	8.5	15.0	0.0	0.0	0.0	17.3	7.7	11.3	0.4	13.1
Safety Score	**94.0**	**88.5**	**87.5**	**91.5**	**85.0**	**100.0**	**100.0**	**100.0**	**82.7**	**92.3**	**88.7**	**99.6**	**86.9**
Performance Score	**76.0**	**-**	**-**	**-**	**-**	**92.6**	**-**	**-**	**-**	**-**	**-**	**-**	**88.8**

Outcomes	Monofilament/Multifilament PDO sutures												
	Kim-Fuchs et al.[14]	**Allahdin, Glazener and Bain**[15]	**Bayraktar et al.**[16]	**Breuninger**[17]	**Cameron et al.**[18]	**Cassie et al.**[19]	**Chusak and Dibbell**[20]	**Constantine et al.**[21]	**Coras et al.**[22]	**Deerenberg et al.**[23]	**Fearon**[24]	**Gillatt et al.**[25]	**Varshney, Manek and Johnson**[26]
1. Surgical Site Infection	0.0	-	19.4	-	8.4	3.6	0.0	-	0.0	22.5	2.8	-	9.4
2. Inflammatory reaction	-	-		8.3	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-		-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-		-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	16.0	-		-	12.0	-	-	-	-	-	-	-	-
PDO device(s)	PDS™	PDS™	PDS™ II	PDS™	PDS™	PDS™	PDS™	PDS™	PDS™ II and Serasynth®	PDS™ Plus II	PDS™	PDS™	PDS™
Number of patients	133	33	101	665	143	28	52	2	26	545	137	46	100
Unfavourable Outcomes	8.0	-	19.4	8.3	10.2	3.6	0.0	-	0.0	22.5	2.8	-	9.4
Safety Score	**92.0**	**-**	**80.6**	**91.7**	**89.8**	**96.4**	**100.0**	**-**	**100.0**	**77.5**	**97.2**	**-**	**90.6**
Performance Score	**100.0**	**51.5**	**-**	**93.8**	**99.3**	**-**	**100.0**	**100.0**	**-**	**-**	**97.0**	**82.6**	**94.1**

Outcomes	Monofilament/Multifilament PDO sutures												
	Guyuron and Vaughan[27]	**Helbling and Schlumpf**[28]	**Hohenleutner et al.**[29]	**Hoile**[30]	**Iwase et al.**[31]	**Justinger et al.**[32]	**Justinger et al.**[33]	**Kasturi et al.**[34]	**Khan et al.**[35]	**Kohler et al.**[36]	**Kreitmann, Riberi and Metras**[37]	**Leaper et al.**[38]	**Williams et al.**[39]
1. Surgical Site Infection	0.0	4.2	0.0	8.5	6.6	10.8	9.2	-	-	26.1	0.0	17.0	12.0
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	0.0	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	29.2	-	-	-	-	-	-	-	44.1	-	-	-
PDO device(s)	Polydioxanone suture	PDS™	PDS™ II	PDS-C	PDS™ II	PDS™ II	PDS™ II	PDS™	PDS™	PDS™	PDS™	PDS™	PDS™
Number of patients	20	24	126	58	152	1045	409	65	1	81	50	107	100
Unfavourable Outcomes	0.0	16.7	0.0	8.5	6.6	10.8	9.2	-	-	35.1	0.0	17.0	12.0
Safety Score	**100.0**	**83.3**	**100.0**	**91.5**	**93.4**	**89.2**	**90.8**	**-**	**-**	**64.9**	**100.0**	**83.0**	**88.0**
Performance Score	**91.7**	**95.8**	**92.0**	**-**	**98.7**	**-**	**-**	**83.5**	**100.0**	**81.5**	**100.0**	**98.1**	**-**

Outcomes	Monofilament/Multifilament PDO sutures													
	Luciani et al.[40]	**Millbourn, Cengiz and Israelsson** [41]	**Muysoms et al.**[42]	**Nahas, Augusto and Ghelfond**[43]	**Nahas et al.**[44]	**Ohira et al.**[45]	**Okano et al.**[46]	**Parara et al.**[47]	**Ruiz-Tovar et al.**[48]	**Schenk, Landsiedl and Enenkel**[49]	**Spencker et al.** [50]	**Tan, Kannan and Page**[51]	**Yamaoka et al.** [52]	**Zhang et al.**[53]
1. Surgical Site Infection	-	7.8	0.0	-	-	7.4	-	0.0	24.5	-	1.1	-	3.1	0.8
2. Inflammatory reaction	-	-	-	-	-	-	-	-		-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-		-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-		-	-	-	-	-
5. Postoperative Pain	-	-	2.0	-	-	-	-	-		-	-	-	-	-
PDO device(s)	PDS™	PDS™ II	PDS™	Polydioxanone Suture	PDS™	PDS™ II	PDS™	PDS™	PDS loop® and PDS Plus loop®	PDS-cord	Polydioxanone Suture	PDS™	PDS™ II	PDS™
Number of patients	181	737	59	10	12	27	11	40	53	13	185	7	323	118
Unfavourable Outcomes	-	7.8	1.0	-	-	7.4	-	0.0	24.5	-	1.1	-	3.1	0.8
Safety Score	**-**	**92.2**	**99.0**	**-**	**-**	**92.6**	**-**	**100.0**	**75.5**	**-**	**98.9**	**-**	**96.9**	**99.2**
Performance Score	**98.3**	**87.9**	**72.4**	**100.0**	**100.0**	**85.7**	**73.0**	**-**	**86.8**	**94.0**	**100.0**	**-**	**-**	**100.0**

Outcomes	Barbed PDO sutures											
	Tan-Kim et al.[6]	**Warner and Gutowski**[54]	**Murphey et al.**[55]	**Yeo, Lee and Han**[56]	**Murtha et al.**[2]	**Wright et al.**[57]	**Donnellan and Mansuria**[58]	**Kelley and Heller**[59]	**Liatsikos et al.**[60]	**Emanuelsson et al.**[61]	**Bogliolo et al.**[62]	**Giampaolino et al.**[63]
1. Surgical Site Infection	-	0.0	-	-	3.2	33.0	-	-	-	18.0	0.0	4.2
2. Inflammatory reaction	-	-	25.0	0.0	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	10.2	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	0.0	0.0	-	-	-	4.2	8.3
5. Postoperative Pain	0.0	-	25.0	-	-	33.0	100.0	-	-	25.0	-	-
PDO device(s)	Quill™ SRS	Quill™	TranQuill	MINT Lift® / Omega 41®	Quill™ bidirectional barbed suture	Quill™ SRS	Quill™	Quil™ SRS	Quill™ SRS	Quill™ SRS	Quill™ SRS	Stratafix®
Number of patients	32	58	20	144	127	3	1	1	6	28	48	17
Unfavourable Outcomes	0.0	0.0	25.0	0.0	6.7	22.0	50.0	-	-	21.5	2.1	6.3
Safety Score	**100.0**	**100.0**	**75.0**	**100.0**	**93.3**	**78.0**	**50.0**	**-**	**-**	**78.5**	**97.9**	**93.8**
Performance Score	**89.3**	**-**	**45.0**	**97.2**	**-**	**0.0**	**0.0**	**100.0**	**16.7**	**96.4**	**-**	**82.4**

Outcomes	Barbed PDO sutures										
	Chan et al.[64]	**Gililland et al.**[65]	**Blanc et al.**[66]	**Gys, Gys and Lafullarde**[67]	**Kang et al.**[68]	**Lee, Yoon and Lee**[69]	**Peleg et al.**[70]	**Shermak, Mallalieu and Chang**[71]	**Ting et al.**[72]	**Yanazume et al.**[73]	**Zayed et al.**[74]
1. Surgical Site Infection	0.0	1.0	-	-	-	0.0	-	1.0	0.0	-	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	0.0	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	2.0
5. Postoperative Pain	-	-	-	-	-	-	-	-	-	0.0	-
PDO device(s)	Stratafix®	Quill™ SRS	Stratafix®	Stratafix®	QTL LIFT™	PDO thread	Stratafix®	Quill™ SRS	Quill™	Stratafix®	Stratafix®
Number of patients	55	104	50	100	33	35	51	103	31	20	50
Unfavourable Outcomes	0.0	1.0	-	-	0.0	0.0	-	1.0	0.0	0.0	2.0
Safety Score	**100.0**	**99.0**	**-**	**-**	**100.0**	**100.0**	**-**	**99.0**	**100.0**	**100.0**	**98.0**
Performance Score	**96.4**	**-**	**100.0**	**60.0**	**84.8**	**100.0**	**68.6**	**17.5**	**-**	**-**	**96.0**

Outcomes	PDO Plates/Meshes										
	Baumann et al. [75]	**Rimmer, Ferguson and Saleh**[76]	**Fuller, Levesque and Lindsay**[77]	**Petropoulos et al.**[78]	**James and Kelly**[79]	**Boenisch and Trenité**[80]	**Tweedie, Lo and Rowe-Jones**[81]	**Dayan and Ashourian** [82]	**Becker et al.** [83]	**Daley et al.** [84]	**Dörfer et al.** [85]
1. Surgical Site Infection	-	2.0	2.6	-	1.7	0.0	-	6.7	0.0	-	6.7
2. Inflammatory reaction	3.2	-	-	0.0	-	0.0	-	-	-	-	-
3. Foreign body reaction	-	-	-	0.0	1.7	0.0	2.0	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	2.6	-	-	-	-	-	-	-	-
PDO device(s)	PDO Sheets	Perforated PDO plate	Perforated and non perforated PDO plates	PDO foil	PDO foil	PDO plate	Unperforated or perforated PDO plate	PDO plate	PDS foil	Polydioxanone tape	Polydioxanone membrane (Mempol)
Number of patients	31	102	88	12	58	3	50	15	Not clear	45	15
Unfavourable Outcomes	3.2	2.0	2.6	0.0	1.7	0.0	2.0	6.7	0.0	-	6.7
Safety Score	**96.8**	**98.0**	**97.4**	**100.0**	**98.3**	**100.0**	**98.0**	**93.3**	**100.0**	**-**	**93.3**
Performance Score	**67.0**	**95.1**	**79.5**	**90.9**	**100.0**	**87.5**	**86.0**	**100.0**	**-**	**78.0**	**-**

Outcomes	PDO Plates/Meshes										
	Eickholz et al. [86]	**Eickholz et al.** [87]	**Epprecht et al.** [88]	**Gierloff et al.** [89]	**Iizuka et al.** [90]	**Kontio et al.** [91]	**Krokidis et al.** [92]	**Moina, Moina and Racanti** [93]	**Pau et al.** [94]	**Repici et al.** [95]	**Sand, Desai and Branham** [96]
1. Surgical Site Infection	4.5	3.8	5.0	0.0	0.0	-	-	-	0.0	-	-
2. Inflammatory reaction	-	-	-	-	0.0	6.3	18.2	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	5.0	-	-	-	-	-	-	-	-
PDO device(s)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	PDS plate	PDS foil	PDS Plate	PDS plate or sheet	Oesophageal Degradable BD SX-ELLA Stent	PDS plate	PDS sheet	Ella Stent	Polydioxanone plate
Number of patients	21	13	20	194	20	16	11	10	19	11	7
Unfavourable Outcomes	4.5	3.8	5.0	0.0	0.0	6.3	18.2	-	0.0	-	-
Safety Score	**95.5**	**96.2**	**95.0**	**100.0**	**100.0**	**93.8**	**81.8**	**-**	**100.0**	**-**	**-**
Performance Score	**-**	**-**	**95.0**	**75.0**	**92.6**	**-**	**18.2**	**100.0**	**94.7**	**45.5**	**85.7**

Outcomes	PDO Screws/Pins						PDO Clips/Staples			
	Small, Braly and Tullos[97]	**Kalla and Janzen**[98]	**Chandran, Kamath and Nihal**[99]	**Prior et al.**[100]	**Gill et al.**[101]	**McManners, Moos and El-Attar**[102]	**Finley et al.**[103]	**Miller et al.**[104]	**Brusky and Tran**[105]	**Yasui et al.**[106]
1. Surgical Site Infection	0.0	0.0	-	0.0	1.7	-	100.0	-	100.0	-
2. Inflammatory reaction	-	50.0	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	50.0	-	0.0	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	100.0	-
5. Postoperative Pain	-	50.0	0.0	0.0	-	-	-	100.0	100.0	-
PDO device(s)	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Lapra-Ty® suture clips	Lapra-Ty® suture clips	Lapra-Ty® suture clips	Lapra-Ty® suture clips
Number of patients	71	1	1	39	144	10	1	1	1	30
Unfavourable Outcomes	0.0	37.5	0.0	0.0	1.7	-	100.0	100.0	100.0	-
Safety Score	**100.0**	**62.5**	**100.0**	**100.0**	**98.3**	**-**	**0.0**	**0.0**	**0.0**	**-**
Performance Score	**84.0**	**50.0**	**100.0**	**95.2**	**-**	**78.0**	**0.0**	**0.0**	**0.0**	**90.0**

Supplementary Data 2 - Safety and performance scores for PDO implants found in literature, when compared to non PDO alternatives.

Outcomes	PDO suture vs non-PDO sutures											
	Brolin[7]	**Ulman et al.** [8]	**Seiler et al.**[9]	**Bloemen et al.**[10]	**Albertsmeier et al.**[11]	**Gililland et al.**[65]	**Neubauer et al.**[107]	**Bassi and Tulandi**[12]	**Bogliolo et al.**[62]	**Giampaolino et al.**[63]	**Chan et al.**[64]	**Allahdin, Glazener and Bain**[15]
1. Surgical Site Infection	2	2	0	0	0	0	-	0	-	0	2	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	2	0	0	-	-
5. Postoperative Pain	-	-	-	-	-	-	-	-	-	0	-	-
PDO Device(s)	PDS™	PDS™	MonoPlus® / PDS™ II	PDS™	MonoPlus® / PDS®	Quill™ SRS PDO	Monofilament polydioxanone suture	PDS™	Quill™ SRS	Stratafix®	Stratafix®	PDS™
Non-PDO alternative(s)	Ethibond	VICRYL®	VICRYL®	Prolene®	MonoMax®	Ethibond™ / MONOCRYL®	V-Loc 180	V-Loc	VICRYL®	VICRYL®	VICRYL®	VICRYL®
Number of patients in PDO group	120	61	415	233	141	98	58	139	48	17	55	33
Safety Score	**2**	**2**	**0**	**0**	**0**	**0**	**-**	**1**	**0**	**0**	**2**	**-**
Performance Score	**2**	**2**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**2**	**2**	**0**

Outcomes	PDO suture vs non-PDO sutures											
	Breuninger[17]	**Cameron et al.**[18]	**Cassie et al.**[19]	**Chusak and Dibell**[20]	**Ganesh et al.**[108]	**Gillatt et al.**[25]	**Gupta et al.**[109]	**Guyuron and Vaughan**[27]	**Gys, Gys and Lafullarde**[110]	**Hohenleutner et al.**[29]	**Iwase et al.**[31]	**Justinger et al.**[32]
1. Surgical Site Infection	-	0	1	2	-	-	-	2	-	2	0	-2
2. Inflammatory reaction	0	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	0	1	-	-	-	-	-	-	-	-	-
PDO Device(s)	PDS™	PDS™	PDS™	PDS™	Quill™ PDO	PDS™	PDS®	PDS™	Stratafix®	PDS™ II	PDS™ II	PDS™ II
Non-PDO alternative(s)	Mason 10® and Vicryl and Monocryl®	Prolene®	Nylon	Catgut suture	VICRYL®	Silk or chromic catgut	VICRYL®	Polyglactin 910 Suture	VICRYL®	VICRYL®	Braided Silk	VICRYL® Plus
Number of patients in PDO group	665	143	28	52	2	46	30	12	100	126	152	1045
Safety Score	**0**	**0**	**1**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**0**	**-2**
Performance Score	**0**	**2**	**-**	**2**	**-**	**0**	**2**	**2**	**2**	**2**	**2**	**-**

Outcomes	PDO suture vs non-PDO sutures												
	Justinger et al.[33]	**Kohler et al.**[36]	**Leaper et al.**[38]	**Luciani et al.**[40]	**Nahas, Augusto and Ghelfond**[43]	**Ohira et al.**[45]	**Parara et al.**[47]	**Peleg et al.**[70]	**Ruiz-Tovar et al.**[48]	**Zhang et al.**[53]	**Ting et al.**[72]	**Yanazume et al.**[73]	**Zayed et al.**[74]
1. Surgical Site Infection	-2	0	0	-	-	0	2	-	-	0	2	-	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-	0
5. Postoperative Pain	-	1	-	-	-	-	-	-	-	-	-	2	-
PDO Device(s)	PDS™ II	PDS™	PDS™	PDS™	Polydioxanone	PDS™ II	PDS II™	Stratafix®	PDS loop® and PDS Plus loop®	PDS™	Quill™	Stratafix®	Stratafix®
Non-PDO alternative(s)	VICRYL® Plus	Dynamesh-IPOM	Nylon	Stainless Steel Wire	Mononylon	Polysorb	Polypropylene and Ethilon and APPOSE and Vicryl Rapide	VICRYL® Plus	Vicryl loop® and Vicryl Plus loop®	Silk Thread	VICRYL®	VICRYL®	VICRYL®
Number of patients in PDO group	409	81	107	181	10	27	40	51	53	118	31	20	50
Safety Score	**-2**	**0,5**	**0**	**-**	**-**	**0**	**2**	**-**	**-**	**0**	**2**	**2**	**0**
Performance Score	**-**	**-1**	**0**	**2**	**0**	**0**	**2**	**2**	**-1**	**0**	**0**	**-**	**2**

Outcomes	PDO suture vs other non-PDO devices										
	Obwegeser[111]	**Emanuelsson et al.**[61]	**Kim-Fuchs et al.**[14]	**Helbling and Schlumpf**[28]	**Muysoms et al.**[42]	**Okano et al.** [46]	**Schenk, Landsiedl and Enenkel**[49]	**Spencker et al.** [50]	**Timmermans et al.**[13]	**Yamaoka et al.**[52]	**Shermak, Mallalieu and Chang**[71]
1. Surgical Site Infection	-	0	2	0	2	-	-	0	0	1	1
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	0	0	-	0	-	-	-	-	-	-
PDO Device(s)	PDS™ II	Quill™ SRS	PDS™	PDS™	PDS™	PDS™	PDS-cord	Polydioxanone suture	MonoPlus	PDS™ II	Quill™ SRS
Non-PDO alternative(s)	Titanium miniplates	BARD™ Soft Mesh	Histoacryl	Histoacryl	Polypropylene mesh	Stapling device	Tendon augmentation	2-octyl-cyanoacrylate adhesive	Polypropylene mesh	3M™ Skin Stapler	No barbed suture
Number of patients in PDO group	15	28	133	24	59	11	13	185	107	323	103
Safety Score	**-**	**0**	**1**	**0**	**1**	**-**	**-**	**0**	**0**	**1**	**1**
Performance Score	**0**	**0**	**0**	**0**	**-1**	**-1**	**0**	**2**	**0**	**-**	**0**

Outcomes	PDO Plates/Meshes vs non-PDO devices							PDO Screws vs non-PDO devices		PDO Clips vs no clips
	Dayan and Ashourian[82]	**Becker et al.**[83]	**Christgau et al.**[112]	**Dörfer et al.**[85]	**Eickholz et al.** 86	**Eickholz et al.** 87	**Pretzl et al.**[113]	**Prior et al.** [100]	**Gill et al.** [101]	**Yasui**[106]
1. Surgical Site Infection	0	2	-	0	-	-	-	2	0	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	-	-	-	-	-	2	-	-
PDO Device(s)	PDS™ plate	PDS foil	PDS membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Orthosorb®	Orthosorb®	Lapra-Ty® suture clips
Non-PDO alternative(s)	Graft without PDS plate	Collagen membrane	PLA membrane	Polylactide acetyltributyl citrate membrane (Guidor)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	K wires / VICRYL®	Kirschner wires	No clips
Number of patients in PDO group	15	Not clear	62	15	21	13	13	39	144	30
Safety Score	**0**	**2**	**-**	**0**	**-**	**-**	**-**	**2**	**0**	**-**
Performance Score	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**

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Periodontol 2009; 36: 349–356.

Supplementary Data 1 - Safety and performance scores for PDO implants found in literature.

Outcomes	Monofilament/Multifilament PDO sutures												
	Hehl et al.[66]	**Murtha et al.**[55]	**Baracs et al.**[38]	**Justinger et al.**[34]	**Diener et al.**[36]	**Tan-Kim et al.**[67]	**Brolin**[68]	**Ulman et al.**[69]	**Seiler et al.**[70]	**Bloemen et al.**[71]	**Albertsmeier et al.**[72]	**Bassi and Tulandi**[73]	**Timmermans et al.**[74]
1. Surgical Site Infection	0.0	3.3	12.5	8.5	15.0	-	0.0	0.0	17.3	7.7	11.3	0.7	13.1
2. Inflammatory reaction	12.0	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	19.7	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	0.0	-
5. Postoperative Pain	-	-	-	-	-	0.0	-	-	-	-	-	-	-
PDO device(s)	PDS™ II	PDS™ II	PDS™ Plus / PDS® II	PDS™ Plus / PDS® II	PDS™ Plus / PDS® II	PDS™ II / Monodek ™	PDS™	PDS™	MonoPlus® / PDS™ II	PDS™	MonoPlus® / PDS®	PDS™	MonoPlus ®
Number of patients	33	61	485	865	1185	32	120	61	415	233	141	139	107
Unfavourable Outcomes	6.0	11.5	12.5	8.5	15.0	0.0	0.0	0.0	17.3	7.7	11.3	0.4	13.1
Safety Score	**94.0**	**88.5**	**87.5**	**91.5**	**85.0**	**100.0**	**100.0**	**100.0**	**82.7**	**92.3**	**88.7**	**99.6**	**86.9**
Performance Score	**76.0**	**-**	**-**	**-**	**-**	**92.6**	**-**	**-**	**-**	**-**	**-**	**-**	**88.8**

Outcomes	Monofilament/Multifilament PDO sutures												
	Kim-Fuchs et al.[75]	Allahdin, Glazener and Bain[76]	Bayraktar et al.[77]	Breuninger[78]	Cameron et al.[79]	Cassie et al.[80]	Chusak and Dibbell[81]	Constantine et al.[82]	Coras et al.[83]	Deerenberg et al.[84]	Fearon[85]	Gillatt et al.[86]	Varshney, Manek and Johnson[87]
1. Surgical Site Infection	0.0	-	19.4	-	8.4	3.6	0.0	-	0.0	22.5	2.8	-	9.4
2. Inflammatory reaction	-	-		8.3	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-		-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-		-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	16.0	-		-	12.0	-	-	-	-	-	-	-	-
PDO device(s)	PDS™	PDS™	PDS™ II	PDS™	PDS™	PDS™	PDS™	PDS™	PDS™ II and Serasynth®	PDS™ Plus II	PDS™	PDS™	PDS™

Number of patients	133	33	101	665	143	28	52	2	26	545	137	46	100
Unfavourable Outcomes	8.0	-	19.4	8.3	10.2	3.6	0.0	-	0.0	22.5	2.8	-	9.4
Safety Score	**92.0**	**-**	**80.6**	**91.7**	**89.8**	**96.4**	**100.0**	**-**	**100.0**	**77.5**	**97.2**	**-**	**90.6**
Performance Score	**100.0**	**51.5**	**-**	**93.8**	**99.3**	**-**	**100.0**	**100.0**	**-**	**-**	**97.0**	**82.6**	**94.1**

Outcomes	Monofilament/Multifilament PDO sutures												
	Guyuron and Vaughan[91][88]	**Helbling and S**	**Hohenleutner et al.**[93][90]	**Hoile**[94][91]	**Iwase et al.**[95][92]	**Justinger et al.**[96][93]	**Justinger et al.**[9][79][4]	**Kasturi et al.**[98][95]	**Khan et al.**[99][96]	**Kohler et al.**[100][97]	**Kreitmann, Riberi and Metras**[101][98]	**Leaper et al.**[102][99]	**Williams et al.**[103][100]

		chlumpf9–2–8–9										
1. Surgical Site Infection	0.0	4.2	0.0	8.5	6.6	10.8	9.2	-	-	26.1	0.0	17.0	12.0
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	0.0	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	29.2	-	-	-	-	-	-	-	44.1	-	-	-
PDO device(s)	Polydioxanone suture	PDS™	PDS™ II	PDS-C	PDS™ II	PDS™ II	PDS™ II	PDS™	PDS™	PDS™	PDS™	PDS™	PDS™
Number of patients	20	24	126	58	152	1045	409	65	1	81	50	107	100
Unfavourable Outcomes	0.0	16.7	0.0	8.5	6.6	10.8	9.2	-	-	35.1	0.0	17.0	12.0
Safety	**100.0**	**8**	**100.0**	**91.5**	**93.4**	**89.2**	**9**	**-**	**-**	**64.9**	**100.0**	**83.0**	**88.0**

Score		**3.3**					**0.8**						
Performance Score	**91.7**	**95.8**	**92.0**	**-**	**98.7**	**-**	**-**	**83.5**	**100.0**	**81.5**	**100.0**	**98.1**	**-**

Outcomes	Monofilament/Multifilament PDO sutures													
	Luciani et al.[104][101]	Millbourn, Cengiz and Israelsson [105][102]	Muysoms et al.[106][103]	Nahas, Augusto and Ghelfond [107][104]	Nahas et al.[108][105]	Ohira et al.[109][106]	Okano et al.[110][107]	Parara et al.[111][108]	Ruiz-Tovar et al.[112] [109]	Schenk, Landsiedl and Enenkel[113][110]	Spencker et al.[114][111]	Tan, Kannan and Page[115][112]	Yamaoka et al.[116][113]	Zhang et al.[117][114]
1. Surgical Site Infection	-	7.8	0.0	-	-	7.4	-	0.0	24.5	-	1.1	-	3.1	0.8
2. Inflammatory reaction	-	-	-	-	-	-	-	-		-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-		-	-	-	-	-

4. Postoperative fever	-	-	-	-	-	-	-	-		-	-	-	-	-
5. Postoperative Pain	-	-	2.0	-	-	-	-	-		-	-	-	-	-
PDO device(s)	PDS™	PDS™ II	PDS™	Polydioxanone Suture	PDS™	PDS™ II	PDS™	PDS™	PDS loop® and PDS Plus loop®	PDS-cord	Polydioxanone Suture	PDS™	PDS™ II	PDS™
Number of patients	181	737	59	10	12	27	11	40	53	13	185	7	323	118
Unfavourable Outcomes	-	7.8	1.0	-	-	7.4	-	0.0	24.5	-	1.1	-	3.1	0.8
Safety Score	**-**	**92.2**	**99.0**	**-**	**-**	**92.6**	**-**	**100.0**	**75.5**	**-**	**98.9**	**-**	**96.9**	**99.2**
Performance Score	**98.3**	**87.9**	**72.4**	**100.0**	**100.0**	**85.7**	**73.0**	**-**	**86.8**	**94.0**	**100.0**	**-**	**-**	**100.0**

Outcomes	**Barbed PDO sutures**											
	Tan-Kim et al.[70][67]	**Warner and Gutowski**[118][115]	**Murphey et al.**[119][116]	**Yeo, Lee and Han**[120][117]	**Murtha et al.**[5][5]	**Wright et al.**[63][118]	**Donnellan and Mansuria**[64][119]	**Kelley and Heller**[121][120]	**Liatsikos et al.**[122][121]	**Emanuelsson et al.**[123][122]	**Bogliolo et al.**[124][123]	**Giampa**

												olino et al. [125] ~~124~~
1. Surgical Site Infection	-	0.0	-	-	3.2	33.0	-	-	-	18.0	0.0	4.2
2. Inflammatory reaction	-	-	25.0	0.0	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	10.2	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	0.0	0.0	-	-	-	4.2	8.3
5. Postoperative Pain	0.0	-	25.0	-	-	33.0	100.0	-	-	25.0	-	-
PDO device(s)	Quill™ SRS	Quill™	TranQuill	MINT Lift® / Omega 41®	Quill™ bidirectional barbed suture	Quill™ SRS	Quill™	Quil™ SRS	Quill™ SRS	Quill™ SRS	Quill™ SRS	Stratafix®
Number of patients	32	58	20	144	127	3	1	1	6	28	48	17
Unfavourable Outcomes	0.0	0.0	25.0	0.0	6.7	22.0	50.0	-	-	21.5	2.1	6.3
Safety Score	**100.0**	**100.0**	**75.0**	**100.0**	**93.3**	**78.0**	**50.0**	**-**	**-**	**78.5**	**97.9**	**93.8**
Performance Score	**89.3**	**-**	**45.0**	**97.2**	**-**	**0.0**	**0.0**	**100.0**	**16.7**	**96.4**	**-**	**82.4**

Outcomes	Barbed PDO sutures										
	Chan et al.[126][125]	**Gililland et al.**[127][126]	**Blanc et al.**[128][127]	**Gys, Gys and Lafullarde**[129][128]	**Kang et al.**[130][129]	**Lee, Yoon and Lee**[131][130]	**Peleg et al.**[132][131]	**Shermak, Mallalieu and Chang**[133][132]	**Ting et al.**[134][133]	**Yanazume et al.**[135][134]	**Zayed et al.**[136][135]
1. Surgical Site Infection	0.0	1.0	-	-	-	0.0	-	1.0	0.0	-	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	0.0	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	2.0
5. Postoperative Pain	-	-	-	-	-	-	-	-	-	0.0	-
PDO device(s)	Stratafix®	Quill™ SRS	Stratafix®	Stratafix®	QTL LIFT™	PDO thread	Stratafix®	Quill™ SRS	Quill™	Stratafix®	Stratafix®
Number of patients	55	104	50	100	33	35	51	103	31	20	50
Unfavourable Outcomes	0.0	1.0	-	-	0.0	0.0	-	1.0	0.0	0.0	2.0
Safety Score	**100.0**	**99.0**	**-**	**-**	**100.0**	**100.0**	**-**	**99.0**	**100.0**	**100.0**	**98.0**

Performance Score	**96.4**	**-**	**100.0**	**60.0**	**84.8**	**100.0**	**68.6**	**17.5**	**-**	**-**	**96.0**

Outcomes	PDO Plates/Meshes										
	Baumann et al. [137][136]	**Rimmer, Ferguson and Saleh**[138][137]	**Fuller, Levesque and Lindsay**[139][138]	**Petropoulos et al.**[55][56]	**James and Kelly**[57][58]	**Boenisch and Trenité**[14][05][9]	**Tweedie, Lo and Rowe-Jones**[14]	**Dayan and Ashourian** [141][139]	**Becker et al.** [142][140]	**Daley et al.** [143][141]	**Dörfer et al.** [144][142]
1. Surgical Site Infection	-	2.0	2.6	-	1.7	0.0	-	6.7	0.0	-	6.7
2. Inflammatory reaction	3.2	-	-	0.0	-	0.0	-	-	-	-	-
3. Foreign body reaction	-	-	-	0.0	1.7	0.0	2.0	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	2.6	-	-	-	-	-	-	-	-

PDO device(s)	PDO Sheets	Perforated PDO plate	Perforated and non perforated PDO plates	PDO foil	PDO foil	PDO plate	Unperforated or perforated PDO plate	PDO plate	PDS foil	Polydioxanone tape	Polydioxanone membrane (Mempol)
Number of patients	31	102	88	12	58	3	50	15	Not clear	45	15
Unfavourable Outcomes	3.2	2.0	2.6	0.0	1.7	0.0	2.0	6.7	0.0	-	6.7
Safety Score	**96.8**	**98.0**	**97.4**	**100.0**	**98.3**	**100.0**	**98.0**	**93.3**	**100.0**	**-**	**93.3**
Performance Score	**67.0**	**95.1**	**79.5**	**90.9**	**100.0**	**87.5**	**86.0**	**100.0**	**-**	**78.0**	**-**

Outcomes	PDO Plates/Meshes										
	Eickholz et al.[145][143]	**Eickholz et al.**[146][144]	**Epprecht et al.**[147][145]	**Gierloff et al.**[148][146]	**Iizuka et al.**[149][147]	**Kontio et al.**[150][148]	**Krokidis et al.**[151][149]	**Moina, Moina and Racanti**[152][150]	**Pau et al.**[153][151]	**Repici et al.**[154][152]	**Sand, Desai and Branham**[155][153]
1. Surgical Site Infection	4.5	3.8	5.0	0.0	0.0	-	-	-	0.0	-	-
2. Inflammatory reaction	-	-	-	-	0.0	6.3	18.2	-	-	-	-

3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	5.0	-	-	-	-	-	-	-	-
PDO device(s)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	PDS plate	PDS foil	PDS Plate	PDS plate or sheet	Oesophageal Degradable BD SX-ELLA Stent	PDS plate	PDS sheet	Ella Stent	Polydioxanone plate
Number of patients	21	13	20	194	20	16	11	10	19	11	7
Unfavourable Outcomes	4.5	3.8	5.0	0.0	0.0	6.3	18.2	-	0.0	-	-
Safety Score	**95.5**	**96.2**	**95.0**	**100.0**	**100.0**	**93.8**	**81.8**	**-**	**100.0**	**-**	**-**
Performance Score	**-**	**-**	**95.0**	**75.0**	**92.6**	**-**	**18.2**	**100.0**	**94.7**	**45.5**	**85.7**

Outcomes	PDO Screws/Pins	PDO Clips/Staples

	Small, Braly and Tullos[156][154]	Kalla and Janzen[23][25]	Chandran, Kamath and Nihal[157][155]	Prior et al.[158][156]	Gill et al.[159][157]	McManners, Moos and El-Attar[160][158]	Finley et al.[43][46]	Miller et al.[161][159]	Brusky and Tran[42][45]	Yasui et al.[62][64]
1. Surgical Site Infection	0.0	0.0	-	0.0	1.7	-	100.0	-	100.0	-
2. Inflammatory reaction	-	50.0	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	50.0	-	0.0	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	100.0	-
5. Postoperative Pain	-	50.0	0.0	0.0	-	-	-	100.0	100.0	-
PDO device(s)	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Orthosorb®	Lapra-Ty® suture clips	Lapra-Ty® suture clips	Lapra-Ty® suture clips	Lapra-Ty® suture clips
Number of patients	71	1	1	39	144	10	1	1	1	30
Unfavourable Outcomes	0.0	37.5	0.0	0.0	1.7	-	100.0	100.0	100.0	-
Safety Score	**100.0**	**62.5**	**100.0**	**100.0**	**98.3**	**-**	**0.0**	**0.0**	**0.0**	**-**
Performance Score	**84.0**	**50.0**	**100.0**	**95.2**	**-**	**78.0**	**0.0**	**0.0**	**0.0**	**90.0**

Supplementary Data 2 - Safety and performance scores for PDO implants found in literature, when compared to non PDO alternatives.

Outcomes	PDO suture vs non-PDO sutures											
	Brolin[7 168]	**Ulman et al.[72 69]**	**Seiler et al.[73 70]**	**Bloemen et al.[74 71]**	**Albertsmeier et al.[75 72]**	**Gililland et al.[127 126]**	**Neubauer et al.[162 160]**	**Bassi and Tulandi[76 73]**	**Bogliolo et al.[124 123]**	**Giampaolino et al.[125 124]**	**Chan et al.[126 12 5]**	**Allahdin, Glazener and Bain[79 76]**
1. Surgical Site Infection	2	2	0	0	0	0	-	0	-	0	2	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	2	0	0	-	-
5. Postoperative Pain	-	-	-	-	-	-	-	-	-	0	-	-
PDO Device(s)	PDS™	PDS™	MonoPlus® / PDS™ II	PDS™	MonoPlus® / PDS®	Quill™ SRS PDO	Monofilament polydioxanone suture	PDS™	Quill™ SRS	Stratafix®	Stratafix®	PDS™
Non-PDO alternative(s)	Ethibond	VICRYL®	VICRYL®	Prolene®	MonoMax®	Ethibond™ / MONOCRYL®	V-Loc 180	V-Loc	VICRYL®	VICRYL®	VICRYL®	VICRYL®
Number of patients in PDO group	120	61	415	233	141	98	58	139	48	17	55	33
Safety Score	**2**	**2**	**0**	**0**	**0**	**0**	**-**	**1**	**0**	**0**	**2**	**-**
Performance Score	**2**	**2**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**2**	**2**	**0**

Outcomes	PDO suture vs non-PDO sutures											
	Breuninger[8178]	**Ca**	**Cassie et al.**[8380]	**Chusak and Dibell**[8481]	**Ganesh et al.**[163161]	**Gillatt et al.**[8986]	**Gupta et al.**[164162]	**Guyuron and Vaughan**[9188]	**Gys, Gys and Lafullarde**[165163]	**Hohenleutner et al.**[9390]	**Iwase et al.**[9592]	**Justinger et al.**[9693]
1. Surgical Site Infection	-	0	1	2	-	-	-	2	-	2	0	-2
2. Inflammatory reaction	0	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	0	1	-	-	-	-	-	-	-	-	-
PDO Device(s)	PDS™	**PD**	PDS™	PDS™	Quill™ PDO	PDS™	PDS®	PDS™	Stratafix®	PDS™ II	PDS™ II	PDS™ II
Non-PDO alternative(s)	Mason 10® and Vicryl and Monocryl®	**Pr**	Nylon	Catgut suture	VICRYL®	Silk or chromic catgut	VICRYL®	Polyglactin 910 Suture	VICRYL®	VICRYL®	Braided Silk	VICRYL® Plus
Number of patients in PDO group	665	**1**	28	52	2	46	30	12	100	126	152	1045
Safety Score	**0**	**0**	**1**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**0**	**-2**
Performance Score	**0**	**2**	**-**	**2**	**-**	**0**	**2**	**2**	**2**	**2**	**2**	**-**

Outcomes	PDO suture vs non-PDO sutures												
	Justinger et al.[9794]	**Kohler et al.**[10097]	**Leaper et al.**[10299]	**Luciani et al.**[104101]	**Nahas, Augusto and Ghelfond**[107104]	**Ohira et al.**[109106]	**Para ra et al.**[111108]	**Peleg et al.**[132131]	**Ruiz-Tovar et al.**[112109]	**Zhang et al.**[117114]	**Ting et al.**[134133]	**Yanazume et al.**[135134]	**Zayed et al.**[136135]
1. Surgical Site Infection	-2	0	0	-	-	0	2	-	-	0	2	-	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-	-	0
5. Postoperative Pain	-	1	-	-	-	-	-	-	-	-	-	2	-
PDO Device(s)	PDS™ II	PDS™	PDS™	PDS™	Polydioxanone	PDS™ II	PDS II™	Stratafix®	PDS loop® and PDS Plus loop®	PDS™	Quill™	Stratafix®	Stratafix®
Non-PDO alternative(s)	VICRYL® Plus	Dynamesh-IPOM	Nylon	Stainless Steel Wire	Mononylon	Polysorb	Polypropylene and Ethilon and APP	VICRYL® Plus	Vicryl loop® and Vicryl Plus loop®	Silk Thread	VICRYL®	VICRYL®	VICRYL®

							OSE and Vicryl Rapide						
Number of patients in PDO group	409	81	107	181	10	27	40	51	53	118	31	20	50
Safety Score	**-2**	**0,5**	**0**	**-**	**-**	**0**	**2**	**-**	**-**	**0**	**2**	**2**	**0**
Performance Score	**-**	**-1**	**0**	**2**	**0**	**0**	**2**	**2**	**-1**	**0**	**0**	**-**	**2**

Outcomes	PDO suture vs other non-PDO devices										
	Obwegeser[166][164]	**Emanuelsson et al.**[123][122]	**Kim-Fuchs et al.**[78][75]	**Helbling and Schlumpf**[92][89]	**Muysoms et al.**[106][103]	**Okano et al.**[110][107]	**Schenk, Landsiedl and Enenkel**[113][110]	**Spencker et al.**[114][111]	**Timmermans et al.**[77][74]	**Yamaoka et al.**[116][113]	**Shermak, Mallalieu and Chang**[133][132]
1. Surgical Site Infection	-	0	2	0	2	-	-	0	0	1	1
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-	-

5. Postoperative Pain	-	0	0	-	0	-	-	-	-	-	-
PDO Device(s)	PDS™ II	Quill™ SRS	PDS™	PDS™	PDS™	PDS™	PDS-cord	Polydioxanone suture	MonoPlus	PDS™ II	Quill™ SRS
Non-PDO alternative(s)	Titanium miniplates	BARD™ Soft Mesh	Histoacryl	Histoacryl	Polypropylene mesh	Stapling device	Tendon augmentation	2-octyl-cyanoacrylate adhesive	Polypropylene mesh	3M™ Skin Stapler	No barbed suture
Number of patients in PDO group	15	28	133	24	59	11	13	185	107	323	103
Safety Score	**-**	**0**	**1**	**0**	**1**	**-**	**-**	**0**	**0**	**1**	**1**
Performance Score	**0**	**0**	**0**	**0**	**-1**	**-1**	**0**	**2**	**0**	**-**	**0**

Outcomes	**PDO Plates/Meshes vs non-PDO devices**							**PDO Screws vs non-PDO devices**		**PDO Clips vs no clips**
	Dayan and Ashourian[141~~139~~]	**Becker et al.**[142~~140~~]	**Christgau et al.**[167~~165~~]	**Dörfer et al.**[144~~142~~]	**Eickholz et al.**[145~~143~~]	**Eickholz et al.**[146~~144~~]	**Pretzl et al.**[168~~166~~]	**Prior et al.**[158~~156~~]	**Gill et al.**[159~~157~~]	**Yasui**[6264]
1. Surgical Site Infection	0	2	-	0	-	-	-	2	0	-
2. Inflammatory reaction	-	-	-	-	-	-	-	-	-	-
3. Foreign body reaction	-	-	-	-	-	-	-	-	-	-
4. Postoperative fever	-	-	-	-	-	-	-	-	-	-
5. Postoperative Pain	-	-	-	-	-	-	-	2	-	-

PDO Device(s)	PDS™ plate	PDS foil	PDS membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Polydioxanone membrane (Mempol)	Orthosorb®	Orthosorb®	Lapra-Ty® suture clips
Non-PDO alternative(s)	Graft without PDS plate	Collagen membrane	PLA membrane	Polylactide acetyltributyl citrate membrane (Guidor)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	Polylactide acetyltributyl citrate membrane (Guidor Matrix Barrier)	K wires / VICRYL®	Kirschner wires	No clips
Number of patients in PDO group	15	Not clear	62	15	21	13	13	39	144	30
Safety Score	**0**	**2**	**-**	**0**	**-**	**-**	**-**	**2**	**0**	**-**
Performance Score	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**