

CLOSURE DEVICES

Company Name	Product Name	Type	Puncture Size (F)	Maximum Wire Compatibility (inch)	FDA Approved	Comments
Abbott Vascular	Perclose A-T	Suture	5–8	0.038	Yes	Automated knot for secure, mechanical vascular closure of 5- to 8-F access sites; braided polyester suture closure can be challenged and confirmed at the table
	Perclose ProGlide					Automated knot for secure, mechanical vascular closure of 5- to 8-F access sites; monofilament polypropylene suture closure can be challenged and confirmed at the table
	Prostar XL		8.5–10			Designed to close up to 10-F access sites; braided polyester suture for secure, mechanical closure; closure can be challenged and confirmed at the table
	StarClose	Nitinol clip	5, 6			An extravascular nitinol clip that mechanically closes the arteriotomy to ensure rapid hemostasis; closure can be challenged and confirmed at the table
	StarClose SE					Next-generation StarClose with enhanced ease-of-use design; extravascular nitinol clip that mechanically closes the arteriotomy to ensure rapid hemostasis; closure can be challenged and confirmed at the table
AccessClosure, Inc.	6-F/7-F Mynx Vascular Closure Device	Extravascular polyethylene glycol (PEG) sealant	6, 7	Utilizes existing procedural sheath	Yes	Designed to minimize closure-related pain; uses extravascular, conformable PEG sealant that provides durable hemostasis; dissolves within 30 days, leaving nothing behind
	Mynx M5 Vascular Closure Device		5			A true 5-F closure device; delivers extravascular, conformable PEG sealant through the existing 5-F procedural sheath; provides durable hemostasis and dissolves within 30 days, leaving nothing behind
Cardiva Medical, Inc.	Cardiva Catalyst II	Arteriotomy tamponade	5, 6, 7	Works through existing sheath	Yes	Deployable nitinol disc that provides temporary hemostasis at the arteriotomy, allowing it to recoil to the size of an 18-gauge needle; hemostatic coating on the wire accelerates the clotting cascade quickly facilitating vessel closure, preserving the artery, and leaving nothing behind
	Cardiva Catalyst III	Arteriotomy tamponade for use with heparinized patients				Catalyst III expands on Catalyst II technology with the addition of a protamine sulfate coating; in patients receiving heparin, this coating acts to locally neutralize the effects of heparin in the tissue tract at the puncture site and further aid the body's natural healing process.

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Morris Innovative	FISH (Femoral Introducer Sheath and Hemostasis) Device	Biomaterial (SIS) seal allows for remodeling of host tissue at the arteriotomy	5, 6, 8	Works through existing sheath	Yes	Closure begins with access as the biomaterial sealant is introduced through the procedural sheath; the biomaterial actively approximates the arteriotomy for sealing where it is most effective, completely healing the vessel without scar tissue formation
Nobles Medical Technologies	SuperStitch	Polypropylene suture and knot	6–12	Works through existing sheath	Yes	True 6- and 8-F suture delivery through the sheath; does not enlarge arteriotomy; available in 6-, 8-, and 12-F, as well as 12-F extended length
St. Jude Medical, Inc.	Angio-Seal VIP, Angio-Seal STS Plus	Mechanical seal	6, 8	6 F = 0.035; 8 F = 0.038	Yes	Suture, collagen, and anchor sandwich of the arteriotomy; all components reabsorb within 90 days; FDA labeling for immediate restick
	Angio-Seal Evolution		4–8			Next-generation Angio-Seal with automated collagen compaction and enhanced ease-of-use design; suture, collagen, and anchor sandwich of the arteriotomy; all components reabsorb within 90 days; FDA labeling for immediate restick
	VasoSeal VHD, ES, Elite	Extravascular collagen sponge	5, 6, 7, 8	0.038		Extravascular: no permanent intra-arterial component; bioabsorbable, proven collagen supports the natural healing process
	VasoSeal Low Profile		4, 5			Smaller design than VHD to accommodate 4- and 5-F puncture tracts
Vascular Solutions, Inc.	Duett Pro, Diagnostic Duett Pro	Thrombin and collagen procoagulant	5–9	Works through existing sheath	Yes	Utilizes the existing sheath, a balloon catheter, and a procoagulant to achieve hemostasis; Duett Pro is approved for use with GP IIb/IIIa inhibitors and ACT of < 400

ASSISTED COMPRESSION DEVICES

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Abbott Vascular	Chito-Seal	Topical hemostasis pads/patches	All	N/A	Yes	Chito-Seal is coated with Abbott's proprietary Chitosan Gel, which consists of positively charged chitosan molecules that attract negatively charged red blood cells and platelets; when placed over the puncture site, Chito-Seal's cell binding ability expedites clot formation and accelerates hemostasis
Angiotech Interventional	V+Pad	Topical hemostasis pads/patches	All	All	Yes	Promotes platelet aggregation to D-glucosamine enriched fibers and exposed collagen at puncture site; platelet degranulation stimulates the body's natural clotting cascade in the intrinsic pathway forming a rapid platelet plug resulting in hemostasis
Datascope	Safeguard (12, 24 cm)	Pressure-assisted device	6	N/A	Yes	Assists manual compression and maintains hands-free pressure; adjustable pressure is applied to wound and access sites via an inflatable bulb contained within an adhesive bandage, allowing visibility of the site; available in two sizes for use anywhere pressure is required
Marine Polymer Technologies	Syvek Patch, SP, NT	Topical hemostasis pads/patches	All	All	Yes	Indicated for rapid hemostasis at the vascular access site, including patients on anticoagulation therapy
	Syvek Excel Vascular Access Hemostasis System	Topical hemostasis pads/patches compression assist device				Includes Syvek Excel patch, compression assist device, sterile wipe, and transparent film dressing
Medrad Interventional/Possis	SafeSeal Hemostasis Patch	Topical hemostasis pads/patches	All	N/A	Yes	Uses MPH Technology, a nontoxic, bioabsorbable, plant-derived desiccant; the MPH microbeads act on the fluid component of blood, causing faster, enhanced clotting at the access site; provides safe and rapid hemostasis even in ACT-compromised patients; reduces manual compression time
Merit Medical Systems	RadStat	Radial hemostasis device	All	N/A	Yes	Immobilizes wrist; includes wrist band with compression disc to compress radial artery
Scion Cardio-Vascular	Clo-Sur Plus P.A.D.	Topical hemostasis pads/patches	All	All	Yes	High positive charge attracts negatively charged red blood cells; helps accelerate control of bleeding when placed over the puncture site; includes anticoagulation therapy patients; water soluble for easy removal; only device FDA cleared as an antimicrobial barrier that protects against organisms that may contribute to hospital-acquired infections
Scion CV, distributed by Medtronic, Inc.	Clo-Sur P.A.D.	Topical hemostasis pads/patches	All	All	Yes	High positive charge attracts negatively charged red blood cells; water-soluble; noninvasive P.A.D.

Prepared by the editors of Cardiac Interventions Today in conjunction with the product manufacturers.

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St. Jude Medical, Inc.	FemoStop Gold	Mechanical compression devices	All	All	Yes	Integrated Manometer allows for greater ease of use, accurate pressure management, and reduction of the risk of cross contamination
	RadiStop					Support plate provides comfortable and efficient positioning of the wrist and mechanical compression and stabilization of the radial artery
Terumo Interventional Systems	TR Band	Radial hemostasis device	All	All	Yes	Transparent hemostasis device allowing for complete visual control; dual-compression balloons provide precise compression of the radial artery to ensure blood return without compromising local nerve structure
TZ Medical	Neptune	Topical hemostasis pads/patches	All	All	Yes	Calcium alginate wound dressing that facilitates hemostasis after catheterization; available in standard 2 X 2 pad or with compression disc; no contraindications
	Comfort Band	Compression strap				Radial/brachial strap; comes sterile or nonsterile, available with Neptune calcium alginate
	QuickLamp	Mechanical compression devices				To be used with the Neptune Disc; alternative to holding manual pressure
	EZ Hold	Compression devices				To be used with the Neptune Disc; weighted, T-shaped handle provides an alternative to direct manual pressure and eliminates pain associated with carpal tunnel; reusable
	Neptune Discs					Original manufacturer; disc with Neptune calcium alginate works with all clamp systems on the market; single-use item
Vascular Solutions, Inc.	D-Stat Dry	Thrombin-based topical hemostasis pad with bandage	All	N/A	Yes	A hemostatic pad with the clotting power of thrombin used as an adjunct to manual compression
	D-Stat Dry Wrap	Thrombin-based topical hemostasis pad with bandage				A precut hemostatic pad with the clotting power of thrombin for use around indwelling lines
	D-Stat Radial	Mechanical compression device with thrombin				Adjustable radial compression band layered with a comfort pad and a thrombin pad
	D-Stat Flowable	Flowable thrombin, collagen and Ca++ hemostat				Thick, yet flowable hemostat that can be used topically on sources of active bleeding; indicated for prepectoral pocket hemostasis after generator implantation
	D-Stat Handle	Mechanical compression tool				A comfortable, ergonomically designed complement to the D-Stat Clamp Accessory
	D-Stat Clamp Accessory	Thrombin-based topical hemostasis pad and comfort pad accessory clamp device				Thrombin-based hemostatic bandage configured for attachment to D-Stat Handle and many other standard clamp devices
Z-Medica Corporation	QuikClot Interventional	Topical hemostatic bandage	All, including up to 12 F	N/A	Yes	A pad and 3M Tegaderm adhesive bandage, applied topically as an adjunct to manual compression and indicated for the local management and control of surface bleeding from vascular access sites; it is double packaged in a blister package and in a foil pouch for aseptic use