Prevention and management of suture piercel of intra-coronary shunt at off-pump coronary bypass surgery

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Intra-coronary shunts are used during off-pump coronary artery bypass (OPCAB) surgery at the time of constructing the anastomosis to avoid ischemia and obtain bloodless field [1]. While performing anastomosis, the suture needle could pierce the shunt and it may become evident only at the time of removal of the shunt. We are describing techniques followed in our institute in preventing and managing it.

When a shunt is pierced by a suture across the lumen of the shunt (full-thickness piercel), the shunt is withdrawn from the anastomosis along with the suture controlling the bleeding with a bull dog clamp or snare on the coronary artery. The shunt is held with two forceps, on both sides of suture entry point, stretched apart in opposite directions (Fig. 1). It results in shunt breaking into two pieces centered at the site of suture piercel. Shunt breaks at the site of suture piercel as it is the weakest point in the shunt. Occasionally, it may not be successful, resulting in shunt breaking on one side of the site of shunt piercel. In that case, the suture has to be released from the shunt using 11 number surgical blade, taking care not to cut the suture accidentally.

When the suture passes through the wall of the shunt without crossing the lumen (suture going through partial

thickness of the shunt wall), suture could be pulled out of the shunt wall by forcibly pulling the suture while supporting the shunt with a forceps adjacent to suture entry point (Fig. 2). Suture cuts through the shunt and gets released most of the times, as piercel of the shunt usually takes place in the transparent soft part of the shunt, rather than the opaque bulbous end. The latter is of a harder consistency and is located far away from the anastomotic area. However, if the suture gets cut, while extracting it from the shunt, it will be necessary to complete the suturing with the other end of the suture needle or redo the anastomosis.

Fig. 1 Holding the shunt with two forceps to stretch and break the shunt to release the suture in full-thickness piercel of shunt

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Fig. 2 Stabilizing the shunt with a forceps to pull out the suture in partial-thickness piercel of shunt

There are a few measures which could be helpful either in preventing or in early identification of shunt

piercel. Shunt should be retracted away while taking the bite in the coronary. While taking bites at the distal end of the anastomosis, shunt could be moved to and fro with traction on the suture to make sure that we have not gone through the shunt.

Compliance with ethical standards

Conflict of interest Nil.

Reference

1. Lucchetti V, Capasso F, Caputo M, et al. Intracoronary shunt prevents left ventricular function impairment during beating heart coronary revascularization. *Eur J Cardiothorac Surg*. 1999;15:255–9.

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