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Short Communication

A modified technique for securing drains to the skin

Sebastiano Mura^{a,b,*}, Gianni Franco Guarneri^{a,b},
Pier Camillo Parodi^{a,b}

^a Department of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy

^b Ospedale "Santa Maria della Misericordia", Piazzale Santa Maria della, Misericordia 15, 33100 Udine, Italy

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ABSTRACT

There is a wide range of surgical procedures that require placement of drains. It is important to ensure that the drains remain in the correct position until their removal. The classic method for fixing drains to the skin involves the use of surgical knots. Typically, one or more of them are tied directly to the skin surface, close to the drain exit site, so potentially giving rise to problems involving tissue damage or the development of obvious scars, if the knots are excessively tight around the skin. With the drain fixation technique that we developed none of the knots constricts the skin, so avoiding any kind of damage to it.

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Introduction

There is a wide range of surgical procedures that require placement of one or more drains, mainly to carry various types of fluids (e.g. blood or serum) to the exterior and prevent their accumulation at the surgical site. It is important to ensure that the drains remain in the correct position until their removal; consequently, the need arises to properly secure them to the skin. This can be achieved by

* Corresponding author at: Department of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy.

E-mail addresses: banomu88@live.it (S. Mura), giannifranco.guarneri@asuuiud.sanita.fvg.it (G.F. Guarneri), parodi.piercamillo@aoud.sanita.fvg.it (P.C. Parodi).

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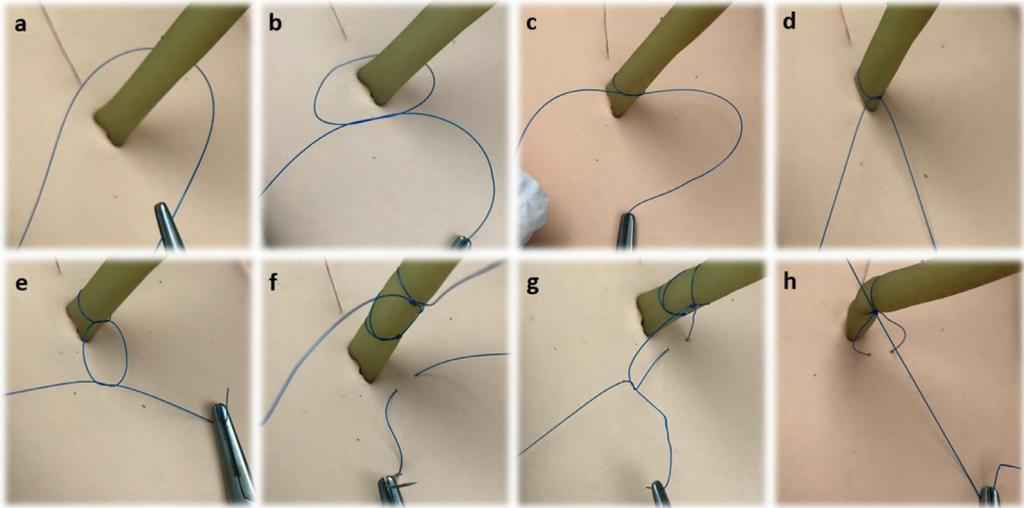


Figure 1. The steps for securing drain to the skin, avoiding the tightening of the knots directly to it.

using adhesive dressings or, more commonly, by performing surgical knots. In this last case, the making of the knots must not cause bending of the tube or any direct obstructions of the lumen, which could prevent the drain from functioning. Several techniques for fixing drains have been described.^{1–3} Drain fixation typically involves tying a primary surgical knot on the skin surface, close to the drain exit site. A series of secondary knots is then created around the drain using the two ends of the thread to produce a braided suture such as the classic “Roman sandal”. However, we have realized that a primary knot, excessively tight around the skin, can sometimes give rise to problems involving tissue damage or the development of obvious scars.⁴ The drain fixation technique that we use allows us to bypass these problems.

Technique

We first create a series of knots around the drain (Figure 1a–e); at this point, the long end of the thread (attached to the needle) is passed through the skin directly next to the drain exit site, to create a loop, which is closed using a classic surgical knot (Figure 1f and g). In this way, the tension of the last knot is released onto the previously formed knots. Regardless of how much force is used when tightening the ends of the thread, the diameter of the loop does not change and the network of knots does not tighten around the skin (Figure 1h). Furthermore, this network of knots wrapped tightly around the tube can prevent the slippage phenomenon, as can be seen in the video.

Comment

Compared to traditional techniques, with this method none of the knots constricts the skin, so avoiding any kind of skin damage. Clearly, care must be taken when performing the fixation knots around the drain to avoid an excessive degree of constriction, which could result in the occlusion of the lumen. Regarding our field of application (plastic surgery), the suture thread normally used for drain fixation is a non-absorbable synthetic braided suture, Poly(ethylene terephthalate), coated with polybutylate (ETHIBOND® EXCEL). A braided suture undoubtedly has the advantage of ensuring greater tightness of the knot, thanks to the friction created. Even monofilament sutures are capable of ensuring a comparable degree of tightness using this technique, provided the knots are properly tied.

Conclusion

Here we present a simple, reliable and safe method of drain fixation. It is easy to learn, it can stay in place for long periods and poses no risks to the skin. In our experience, no cases of infection, obstructions or knot laxity have been recorded.

Declarations

This work has not been presented anywhere and there are no conflicting interests. There has been no funding for this work.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jpra.2018.06.002](https://doi.org/10.1016/j.jpra.2018.06.002).

References

1. Shokrollahi K. A simple method for securing a surgical drain. *Ann. R. Coll. Surg. Engl.* 2005;87:388.
2. Judd O, Gaskin J. A simple, cosmetically superior method of securing a post-surgical drain in facial surgery. *Ann. R. Coll. Surg. Engl.* 2011;93(2):171.
3. Maritz D, McLauchlan C. A novel way to secure a chest drain. *Ann. R. Coll. Surg. Engl.* 2014;96(1):82.
4. Postlethwait RW, Willigan DA, Ulin AW. Human tissue reaction to sutures. *Ann. Surg.* 1975;181:144–150.