Skin Incision for Port Placement in Laparoscopic Surgery—an Often Forgotten Critical Step!

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Abstract Port placement is the first and one of the most important step in laparoscopic surgeries. However, these incisions for port placement are often placed casually leading to larger or smaller incisions than those required. Larger incisions may lead to problems like oozing from skin incisions, egress of gas used to create pneumoperitoneum, while smaller incisions lead to difficulty in port introduction and incision site skin necrosis. We describe a simple and novel technique of giving proper sized skin incision to avoid such problems.

Keywords Laparoscopic port · Skin incision · Pneumoperitoneum · Port placement · Laparoscopy

Point of Technique

Port placement is the first step in laparoscopic surgeries, and incisions given for them are often the only ones visible to the patient. However, these incisions made for insertion of ports are mostly placed by a rough estimate often leading to too long or short incisions. These problems are more frequently encountered during the early years of laparoscopic training.

An inadequately sized incision can lead to intraoperative and postoperative problems, sometimes the only ones in an

otherwise uneventful surgery. An incision larger than the port size can potentially lead to gas leaking from around the port. Also, the benefit of stopping oozing from the skin margins by the tamponading effect of a snugly fitted port is lost, with resultant continuous oozing/trickling of blood during at least the initial part of surgery.

An incision smaller than the required size would lead to obvious difficulties in port placement. Even after placement, a larger port in a relatively smaller incision exerts continuous pressures on the skin margins leading to tissue necrosis and increased risk of surgical site infections. Also, when the incision is enlarged in such a scenario to facilitate port placement, the resultant final incision is often larger than the optimum one.

McKay and Blake have previously described a method to find out the optimum length of incision for port insertion, wherein they calculated the skin incision in millimetres using the mathematical equation for circumference of a circle (i.e. $\pi \times \text{diameter}$) and dividing the resultant value by half, taking the length of incision as equivalent to half the circumference of the port (e.g. 19 mm incision for a 12 mm port) (Fig. 1) [1]. As circle is a continuous figure and not merely a sum of two linear lines, this calculation tends to overestimate the skin incision. It is worthy to note that the shortest distance to reach a destination is a straight line drawn to that point, remembering physics. The practice of using a scale to measure the skin incision routinely is not often followed and easily forgotten during laparoscopic surgeries. Also, the end of all ports is not perfectly circular with some being oval, as shown in Fig. 2, wherein this formula for a circle would not be appropriately applicable.

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Fig. 1 Diagrammatic estimation of the skin incision length for laparoscopic port placement of a circular-tipped port

Hence, we suggest a simple procedure to have an adequately sized skin incision, by making an impression of the port on the skin at the site of incision along the skin crease line and giving an incision along the maximum diameter. This results in a skin incision wherein the port snugly fits. This method is shown step wise in Fig. 3. The resultant skin incision for a 12-mm circular port is nearly 12 mm only, in contrast to 19 mm as suggested by the method described above by McKay and Blake. Apart from being simple and easy to follow, it does not require any mathematical equations for calculation of incision length or adequate measurements using scale and is not time consuming. Moreover, it suits ports of all sizes and shapes. The comparison of length of skin incision by using our method and that described by McKay and Blake is shown in Fig. 1, wherein “y” represents the circumference of the circle and “x” represents the diameter of the circle.

Fig. 2 End on view of tips of various commonly available ports

Fig. 3 Technique of skin incision estimation

By using the method followed by us, there is a satisfactory skin incision, and then as they say “*well begun is half done*”.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Reference

- McKay D, Blake G (2006) Optimum incision length for port insertion in laparoscopic surgery. *Ann R Coll Surg Engl* 88(1):78. <https://doi.org/10.1308/003588406X83131i>