

A MUSCLE LAYER DILATOR FOR PERCUTANEOUS NEPHROSTOMY

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An instrument was developed to establish a tract through the muscle layer for percutaneous nephrostomy. The specially designed clamp holds a guide wire or rod and opens the muscle layer easily and safely. It is not as dangerous as a knife and is inexpensive compared with a disposable balloon dilator.

Key words: Nephrostomy, Instrument, Dilator

INTRODUCTION

Percutaneous nephrostomy has proved to be a reliable method for gaining access to the renal collecting system. One barrier in this procedure, however, has been the resistance of the muscle layer to dilation. A special instrument was developed to overcome this obstacle.

INSTRUMENT

The dilator (Fig. 1) was modified from a conventional clamp. It is bent and has blades 6 cm in length. It can grasp a guide wire or rod of a telescope dilation set (Karl Storz, Tuttlingen)¹⁾ in the inner groove. The outside of the blades is designed to slip easily into the muscle layer, and they are hard enough to dissect the

fasciae when it is opened.

TECHNIQUE

Under observation with an ultrasonoscope, the renal collecting system is punctured with an 18 gauze needle, which is replaced with a 0.35 mm guide wire after contrast medium is injected into the collecting system. The procedure thereafter is monitored by a fluoroscope. Holding the guide wire, one slips in the newly developed dilator. The direction and depth of the dilator can be seen with the fluoroscope. When using the metal telescope dilation set designed by Alken¹⁾, dilation at this step is necessary only to pass the guide rod. After the guide rod has been advanced, the dilator is introduced again; and then with blunt dissection by opening the clamp, a satisfactory track is established through the muscle layer, large enough to pass the following coaxial dilators.

DISCUSSION

The resistance of strong fasciae has been a barrier to establishing a percutaneous nephrostomy track. Wires and soft dilators easily bend in the muscle layer. Before the guiding rod could be introduced, the wire sometimes kinked and guided the dilator in such a way that it damaged the kidney. Although a rod could prevent

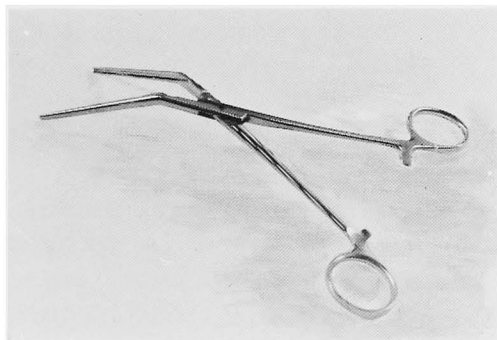


Fig. 1. A newly developed muscle layer dilator for percutaneous nephrostomy.

kinking, the strength needed to pass the muscle layer sometimes injured the fragile kidney tissue.

In blind situations we had used conventional blades and clamps to open the fasciae. A special ring with a double knife led by a wire²⁾ inspired to develop a new instrument. In the blind situation, the dissecting procedure is safer than cutting with a sharp blade because vessels are compressed and deviated by the dissection. By opening the clamp, the tip becomes as wide as is desired. By opening the clamp at various depths and directions, a satisfactory channel can be made. The dilator has some resemblance to a nasal speculum, which was slightly altered and used for open surgery nephrotomy to

retract kidney parenchyma. As mentioned above, my dilator was altered from a surgical clamp and is most suitable for puncture nephrostomy to dilate the tract through the muscle layer. It is not so dangerous as a knife and is inexpensive compared with a disposable balloon dilator.

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和文抄録

経皮的腎瘻のための筋層経路拡張鉗子

国立病院医療センター泌尿器科 (主任: 藤田公生)

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