

Size does matter: 1.5 Fr. stone baskets almost double irrigation flow during flexible ureteroscopy compared to 1.9 Fr. Stone baskets

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ABSTRACT

With a new generation of flexible ureterorenoscopes, a new area in stone management is emerging. Limitation of vision with these new instruments is often caused by insufficient irrigation flow, especially when using instruments like stone baskets, resulting from partial obstruction of the working and irrigation channel with these instruments.

Empirically, new available smaller stone baskets seem to dramatically improve irrigation and therefore vision in clinical use. The goal of this study was to show objective differences in basket diameters and flow rates in an in vitro setting. Diameters and irrigation flows in flexible ureterorenoscopes depending on different sizes of stone baskets (Fr. 1.5–1.7–1.9–2.2–2.4–3.0) and different deflections were measured. The measured diameter of the baskets varied within the first 20 cm and the true measured size varied from the manufacturer's specified size to a different extent.

The new generation of 1.5 and 1.7 Fr. baskets improved irrigation flow, even compared to the smallest commonly used baskets, up to 68%. Interestingly, deflection did not influence irrigation flow. This study confirmed the subjective impression of inadequate description of relevant basket diameters as well as that of a significant improvement of irrigation flow with the newest generation of stone baskets with smaller diameters.

COLOPLAST KEY TAKEAWAYS

- Vision is limited by the amount of irrigation flow through the working channel of a ureteroscope. Irrigation flow improves with smaller diameter baskets.
- The studied 1.5 Fr. basket showed a significant improvement in flow rate in all degrees of deflection, even compared to one of the smallest available nitinol baskets in 1.9 Fr. In the 0° position there was a difference of up to 8.50 ml/min compared to baskets with 1.9 Fr and in the 180° a difference of 6.00 ml/min representing an improvement of irrigation flow of 68.0% and 42.9% respectively.
- The smaller the stone basket the higher the irrigation and therefore the greater the vision. The authors recommend that a small basket be used to have optimal vision and improve therapeutic efficiency of flexible ureteroscopy.
- Coloplast offers small 1.5 Fr no-tip and nitinol frontal stone baskets. These devices are among the smallest diameters available among kidney stone management device manufactures.

DORMIA® FRONT STONE EXTRACTOR

Intended Purpose

Stone retrieval devices serve for the endoscopic removal of stones and their fragments from the urogenital and gastroenterological tract during the course of retrograde interventions.

Indications

For stone removal during the course of rigid and flexible ureterorenoscopy, cystoscopy, endoscopic retrograde cholangioscopy (ERC), endoscopic retro- grade cholangiopancreatography (ERCP).

Contraindications

The contraindications of the above endoscopic interventions apply. The stone retrieval devices may not be used for Percutaneous Nephrolithotomy (PNCL). Stone retrieval devices may not be used for intravascular applications or other application areas, as sufficient clinical experience is lacking for this.

Warnings

If used improperly, stone retrieval devices can cause the perforation of tissue, in particular if the stones are lodged on the vessel wall. The stone bed is then frequently very fragile. The use of contrast media can lead to adhesions that can limit the functionality of the stone retrieval device. Some stones may be too large to be removed with the stone retrieval device through the endoscope because the stone could get stuck in the working channel of the endoscope during removal. Therefore, always the complete system of endoscope and retrieval device shall be removed and the retrieval device shall be emptied outside the human body. Stone retrieval devices may not be used for mechanical stone crushing (lithotripsy).

Precautions

This type of device must be used only by trained and experienced professionals. If excessive force is used, there is a potential for vessel wall tear. Do not use the stone retrieval device if the stone is too large.

Potential Complications

The following complications are possible when using stone retrieval devices for stone removal: Entrapment of large stones, inability to disengage the dislodger from irretrievable stones requiring the application of other interventions, tissue perforation, breakage of the stone retrieval device, infection, and non-retrievable stones.

The risks and benefits of using Dormia® Front Stone Extractor should be considered in patients.

The information provided is not comprehensive with regard to product risks. For a comprehensive listing of indications, contraindications, warnings, precautions, and adverse events refer to the product's Instructions for Use. Alternatively, you may contact a Coloplast representative at 1-800-258-3476 and/or visit the company website at www.coloplast.com.

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.

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