

Novel “Through-the-Endoscope” Technique for Removing Biliary Stones Trapped in a Retrieval Basket

The endoscopic removal of large biliary stones often requires a mechanical lithotripter [1–5]. One must anticipate the likelihood that mechanical lithotripsy will be needed and use a preloaded lithotripter to capture the stone. Occasionally a stone has been judged to be extractable using a standard basket but the basket with the captured stone then becomes trapped in the distal bile duct. The standard approach to such a situation is to cut off the basket handle and remove the endoscope [2,4]. A flexible spiral metal crushing sleeve (e.g. Soehendra lithotripter, Wilson-Cook, Winston-Salem, North Carolina, USA) is then advanced over the basket wires [2,4]. Traction is applied with a crank under fluoroscopy. Usually the stone will be crushed, or the basket wires will break releasing the stone [2,4]. We describe a novel and simple “through-the-endoscope” technique for removing a noncrushing basket with a trapped stone.

The proposed approach involves leaving the endoscope in place. The plastic sheath of the basket is removed and, if necessary, to accomplish this the plastic handle is cut off with wire-cutters. A 7-Fr or 10-Fr Medi-Globe metal spiral sheath (Medi-Globe, Grassau, Germany; formerly manufactured by Pentax, Orangeburg, New York State, USA) is then advanced through the endoscope channel over the basket wire. Under direct endoscopic view the metal sheath is passed over the basket wires through the papilla. When the basket is engaged, the position of the basket and the metal sheath is checked under fluoroscopy. The basket wire is then tightened with the handle of the Medi-Globe mechanical lithotripter under fluoroscopic control until the stone is crushed or the basket breaks and disengages the stone (Figure 1). We have attempted this “though-the-endoscope” technique in four cases and succeeded in all of them.

If a stone has been judged to be extractable using the standard basket, but the basket with the captured stone then becomes stuck in the distal bile duct, the only currently available option is to use

the Soehendra lithotripter. When using the Soehendra lithotripter we prefer to leave the plastic sheath in place to create a three-layer system (basket wire, plastic sheath and metal sleeve) because the wire and plastic sheath can be cranked together. However, the Medi-Globe system handle can capture only the wire. If the plastic sheath is left in place it will wrinkle and jam the metal sheath as the wire is cranked. For this reason we recommend removal of the plastic sheath. A great advantage of our proposed technique is that it can be used with any commercially available “noncrushing” baskets. This “through-the-endoscope” approach avoids the need for removing the endoscope and then re-intubating the patient to complete the procedure. This should be of particular benefit in patients with difficult duodenal access. It also allows for a direct endoscopic view of the passage of the metal sleeve through the papilla, avoiding the risk of papillary tissue being caught between the metal sleeve and basket wire. We believe that this technique is easier, faster and, it is hoped, safer than the standard approach, and can

replace the use of the cumbersome Soehendra lithotripter.

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Figure 1 The plastic sheath of the Dormia basket has been removed and the Medi-Globe metal sleeve has been inserted via the channel of the endoscope over the basket wire. The Medi-Globe crank is capturing the basket wire