Atraumatic Tip Geometry for Endoluminal Devices

Technology #6453

Enteral nutrition refers to the delivery of nutrients directly to the gastrointestinal tract, and is used for patients who are unable to eat normally due to illnesses or surgeries. Formulae are introduced into the stomach and intestines using feeding tubes, passed through the nose or skin. These tubes are semi-rigid in nature, and do not always readily conform to the convoluted and curved shape of the gastrointestinal tract. As a result, the tip of the feeding tube can apply excessive pressure on the gastrointestinal wall and cause perforations, causing significant trauma often necessitating surgery.

In order to prevent tissue perforation and ischemia, researchers at the University of Michigan have designed an atraumatic tip for enteral feeding tubes.

Atraumatic tip geometry for enteral tubes reduces the risk of perforation

The tip geometry primarily consists of a gradual tapering from the rigid portion of the device to a flexible tip. This occurs without an abrupt transition in device rigidity, and the end of the taper is flexible relative to the gastrointestinal wall. This geometry provides gradual draping of the bowel over the device, preventing a transition point where the tract bends sharply over a rigid device tip. This allows the device to exert progressively less radial force on the tissue wall.

Applications

- Medical device for growing short bowel to correct short bowel syndrome
- Enteric tubes placed for nutrition and drug delivery
- Endoscopic and endovascular placement of indwelling enteric and vascular catheters

Advantages

- Greatly improves the safety of any endoluminal device
- Minimizes the risk of device tip-related perforation
- May be used to exert distractive force directly, with decreased risk of perforation.

Inventors

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