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FISTULA DEBRIDER DEVICE (INNOVATIONS AND ADVANCES IN SURGERY)

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Abstract

The present invention relates generally to medical devices. Embodiments of the invention relate to medical products for treating fistula including those having a primary opening in the lower alimentary canal. More specifically, the invention relates to a **fistula debrider device** to remove dead tissue or extraneous material from a fistulous tract wound without widening the fistulous tract. Aspects of the present invention provides a device for debriding of a fistula tract is provided. The device includes a hollow tube enclosed inside a spring and a guide wire having a first end passing through the hollow tube. The guide wire is adapted to pass through the fistula tract along with the hollow tube having the spring loaded thereon. The spring present on the external surface of the hollow tube is adapted to break dead tissues present in the fistula tract while passing through the fistula tract.

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Introduction:-

Fistula-in-ano is an inflammatory track which has an external opening (secondary opening) in the perianal skin and an internal opening (primary opening) in the anal canal or rectum. This track is lined by unhealthy granulation tissue and fibrous tissue.

This device is used in general surgery, to remove debris, plaques, etc from the fistulous tract. This device debrides the unhealthy granulation tissue & fibrous tissue. This device is blunt rigid device. This device is to be counted in surgical instruments. It contains a hollow tube for guiding the debrider & above this hollow tube a medium size spiral spring is attached. The length of this device is near about 15 cm. Diameter is 5 mm. The base of this device is broad to attach with electric drill machine. The small size 6.5 mm electric drill machine is being used of for debriding fistulous tract.

There are some type of micro-debriders for sinus debriding are available in the market, but those are very expensive. The microdebrider was originally patented in 1969 for the use of removing tumors around the acoustic nerve. Since that time, the use of the microdebrider was adopted as a surgical instrument for use in ENT Surgery and then for nasal and endoscopic sinus surgeries in the 1990s. This instrument is perhaps one of the most important innovations that have been brought into the field of rhinology.

This fistula device is very easy to operate as well cost effective. Manufacturing cost of this device is less than Rs. 5000/- except in electric drill machine. This device is reusable.

Till date most of the surgeons of the world, completely cut the fistulous tract & debrided by manually with the help of scoop. Due to this procedure, patient suffers from big wound. But in Sushrut Samhita, Acharya Sushruta suggests ksharsutra method for Fistula in ano, which is most successive method to operate & cure to fistula in ano. This Ksharsutra cauterize chemically to the tract inflammatory unhealthy granulated tissue. But in such thin tract debridement by traditional method is impossible by scoop. In this case, such device is helpful to debride that fistulous tract without widening the tract. After debriding throughly wash with normal saline. Then Ksharsutra should be applied. This is minimal invasive surgery compare to traditional modern surgery for fistula in ano.

Move over, this procedure is completely performing with guide wire. So there is no chance of making false tract/ passage. This debridement will definately help to early recovery of avoid recurrence of the fistula.

Fistula track must be laid open. The patient is placed in lithotomy position. The bidigital examination is made under anaesthesia to reveal cord like induration representing the track. A probe is inserted through the fistula track. Care must be taken not to create a false passage. A propointed director is now introduced through the external opening and its tip comes out through the internal opening. With a knife the track is now opened on the director. If there are multiple fistulae the probe-pointed director is passed through individual external opening and brought out through the internal opening and the corresponding track is laid open with the knife. After the fistula track has been laid open, (i) either the unhealthy granulation tissue on the wall of the fistula is scraped off with a Volkmann spoon or (ii) the whole track with the fibrous tissue is excised. The cavity is packed with roller gauze wrung with weak antiseptic lotion. Healing will take place by granulation tissue from the depth.

Material:-

- 1) Hollow stainless steel tube (1 mm diameter)
- 2) Spring (4-5m diameter, 10 cm in length)
- 3) Flexible guide wire
- 4) Electric 6.5 mm drill machine

Methodology:-

All above raw materials are easily available in the market. A hollow stainless still tube of pig-tale catheter is used for this device. This pig-tale catheter is cut with keeping the length of 15 cm.

10 cm long spring is permanently fixed over this hollow tube by Blacksmith from the market.

First the fistulous tract should be recognize by probe, then flexible guide wire should inserted through & through from external & internal opening of the fistulous tract. Then distal end of the guide wire should inserted in this hollow channel of this device which is already loaded with electric drill machine.

Then this fistula derider penetrate into fistulous tract & derides complete tract. We can adjust the speed of drill machine & also rotate it clock wise & anti-clockwise direction. This tract throughly wash with normal saline. No dead tissues or debris left behind. Then ksharsutra is to be applied.

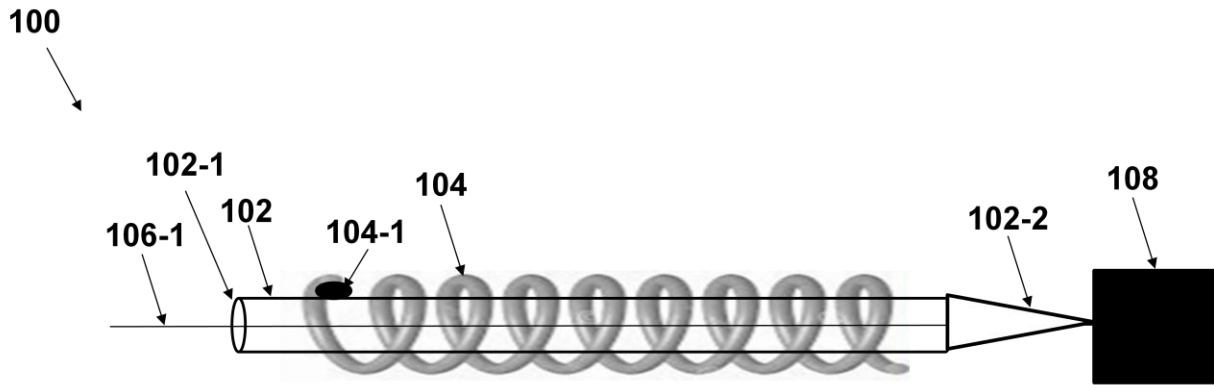


FIG. 1

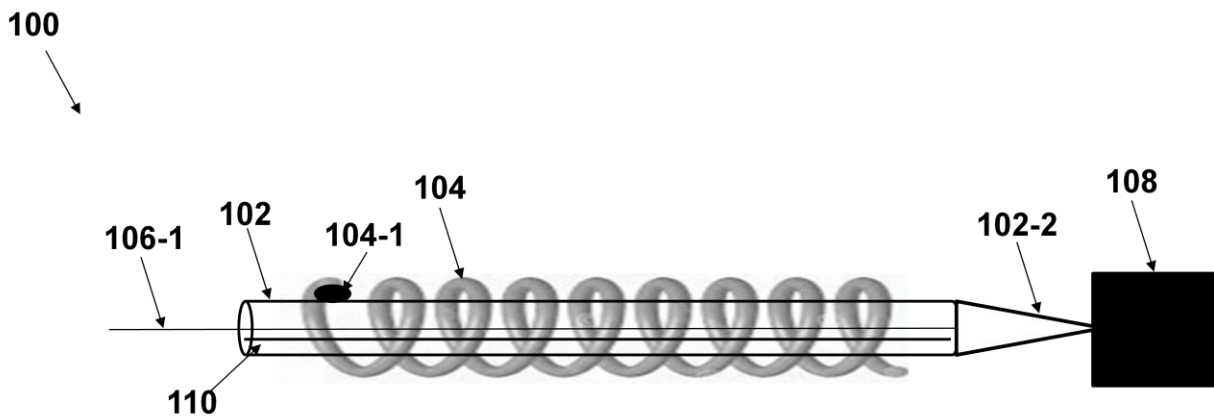


FIG. 3A

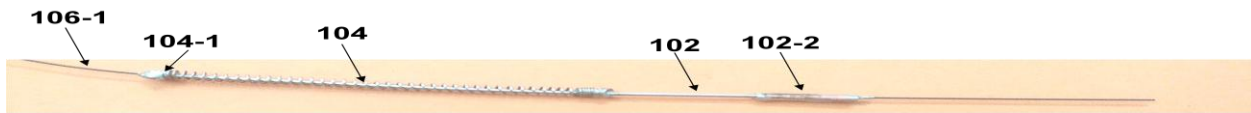
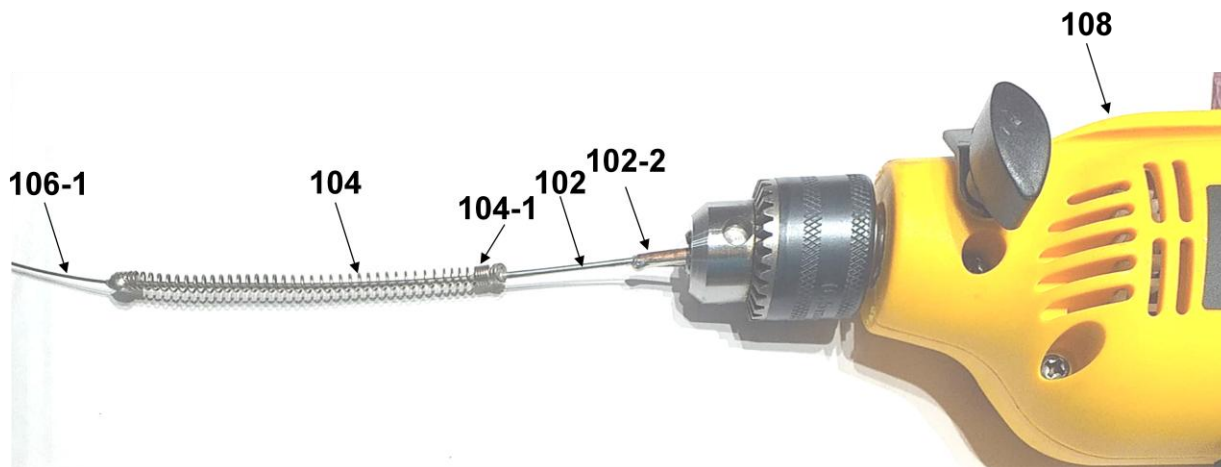
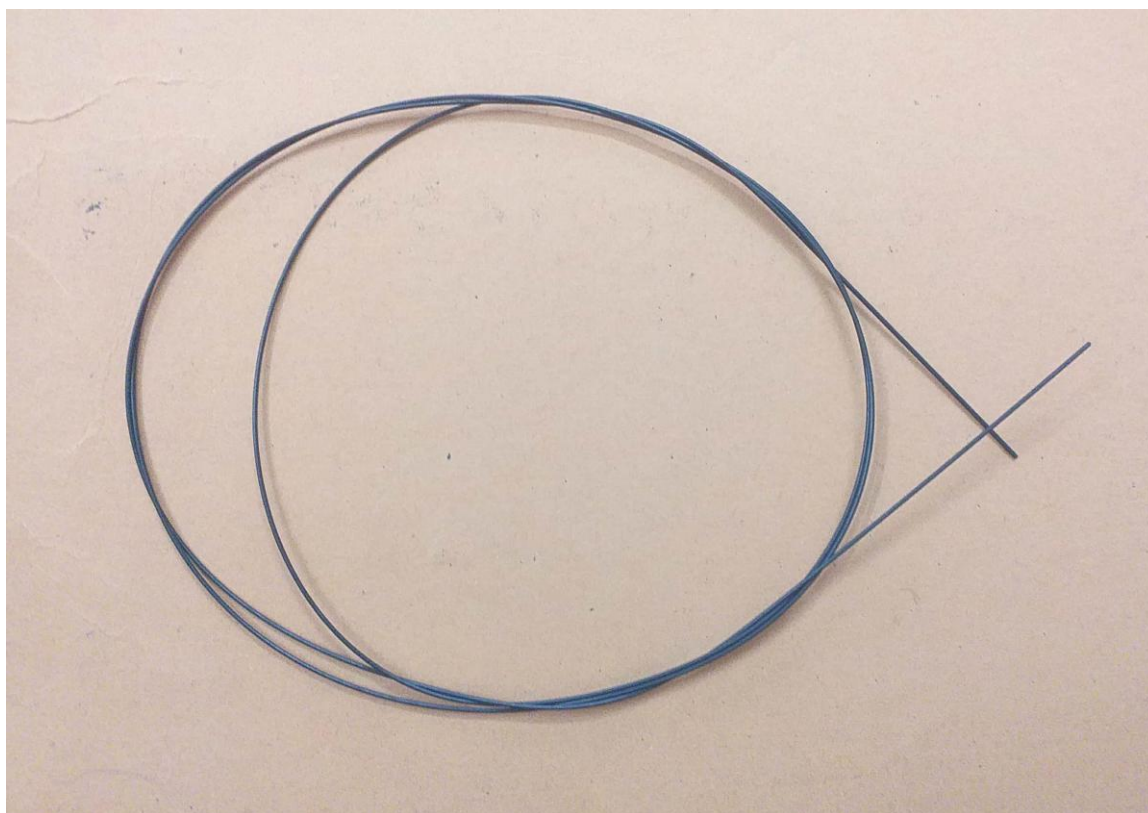


FIG. 3B





Guide wire



Guide wire loaded Fistula Debrider Device



Electric Drill Machine

Fistula Debrider Device –

A Simple, Powerful, Versatile instrument

Fistula Debrider delivers a simple, disposable option that is both cost-effective and portable for simple curretting procedures in Fistula in ano. This plug and perform fistula debrider offers the same advantages as a full debrider system.

Plug and perform

- Save time of surgery & anaesthesia while reducing costs
- Enhanced flexibility and safety.
- Less bleeding. Manage incidental bleeding
- Simplified move of debriding procedures to OPD patient.
- Uniqueness
- Inventiveness
- Beneficial
- Inexpensive
- Complete debridement in 360° (while in traditional method chances of remaining of dead tissue in fistulous tract.)

We have conducted novelty/ inventiveness search for our invention. We search on GOOGLE also. We found no information regarding fistulous tract debrider.

a) Generally, surgeons are practising what they were taught. According to their training & teaching, they are doing traditional surgeries. Very few surgeons are thinking extraordinary. So average skill surgeon would not think about invention.

b) Success rate of this fistula surgery are very less. Recurrent rate is very high. So even well practiced, senior surgeons are also keep them away from such complicated fistula in ano surgeries.

This fistula debrider may helpful for entire surgeons of the world. To make free from fistula disease to their patients. This device would be the boon for entire human beings.

The Use of the Fistula debrider Device in fistula in Ano Surgery – Bottom of Form

The fistula debrider is a cylindrical instrument that has a hollow tube with an inner and outer portion. At the distal end of the tube have a spiral spring that smoothly cuts dead tissues as the spring move back and forth. The catheter has continuous suction applied to the device so that cut tissue is captured and removed from the surgical area. Faster the speed, the smaller the pieces, while the slower the speed are set, the larger the pieces. The quality of the cuts are good enough to be used by histo-pathology if cancer or other disease-specific analysis needs to be performed.

Alternative Methods -

Before the use of fistula debriders, fistula surgery usually included the traditional use of curettes and forceps. This was a manual method for extracting inflammatory over granulated tissues from the para-anal region. Power drills are also an alternate power tool that can be used in the surgical setting. We will explore the advantages that using a fistula debrider has brought to the surgical world. However, in practice, surgeons will often use a combination of curettes, fistula debriders, and forceps.

While the use of a fistula debrider will not reduce the risk of bleeding, continuous suction allows your surgeon's vision of the surgical site to remain clear for much longer periods of time. This can reduce the overall surgical time required to perform your surgery by reducing the number of time the surgeon needs to swap instruments. In future, we will modify this fistula debrider by adding the ability to cauterize in the same instrument which further allows for less blood loss and less changing of instruments.

Disadvantages -

Complications associated with using a fistula debrider are quite rare; however, it is important that you understand any of the risks that may be associated with your surgery. In general, fistula debriders are safe tools used for fistula surgery.

Conclusion:-

The Fistula Debrider Device have a high significance & playing a major role in avoiding the recurrence of Fistula in Ano.

Conflicts of interest -

None declared.

Source of support –

Nil

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