A new instrument for rectal suction biopsy in the diagnosis of Hirschsprung’s disease: Triple rectal suction biopsy

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ABSTRACT

A new instrument for suction rectal biopsy in infants suspected of having Hirschsprung’s disease is described that can be completely dismantled, physically cleaned, lubricated, and heat sterilised. Triple rectal suction biopsy instrument with the patent application, which involves (0.5 cm diameter) suction of mucosa and sub-mucosa and provides taking three different biopsies within a 2 cm distant from each other with a single shot, instead of only one or taking a full layer biopsy under general anesthesia for the diagnosis of Hirschsprung disease. As a preliminary study, in the 36 and 12 biopsy materials taken from the rabbits and children, respectively, it was found that mucosa and sub-mucosa were sufficient and in all of the cross sections, parasympathetic nerve fibers, and ganglion cells were existed. A successful biopsy was usually achieved and no complications occurred.

KEY WORDS: Hirschsprung’s disease, triple rectal biopsy

INTRODUCTION

The diagnosis of Hirschsprung’s disease (HD) was revolutionized by the ease of the suction rectal biopsy, allowing specimens to be taken without undue morbidity when the patient awake and without any form of speculum or proctoscope.

It is a device that can take three separate rectal biopsies within a 2 cm distant from each other with a single shot even in the patient’s bed without general anesthesia. This instrument has been fabricated with the advantage that can be completely dismantled, allowing through cleaning and heat sterilization.

MATERIALS AND METHODS

The instrument made of stainless steel, has two cylinders passing through each other and containing with sharpened sides of three 0.5 cm holes and with 2 cm distant from each other. The holes are positioned facing to the posterior rectal wall [Figure 1].

Biopsies are taken by firm suction on a connected 20 ml syringe applied via the canula located at the tip of inner cylinder and by pulling the inner cylinder 1 cm back out of the outer cylinder, specimens cutting mechanism are activated. After removing the device from the rectum, the biopsy specimens are taken out of the holes separately. The three specimens are then transferred to absorbent or reagent paper, which is writing on the surface:

U (Upper), M (Middle), and L (lower). It has rarely failed to achieve a satisfactory biopsy, the only common error being to take the biopsy for lower hole (L). There have been no perforations or other major complications.

Figure 1: Prototype instrument
DISCUSSION

The advantages of this instrument are (1) the ability to be dismantled, cleaned and heat sterilized, (2) taking more than one biopsy with a single shot provides easiness for the patient and the doctor, (3) Biopsy procedure and the diagnosis of HD will became easier and faster, and (4) repeating of procedures are unnecessary because of triple different biopsy existence.

This instrument is also economic, safe, easy to use and apply, and commercially available.

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