A new tool for intraoperative marking

Um novo instrumento para marcação intraoperatoría

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ABSTRACT
This article describes the adaptation of a micro-punch mandrel, which is usually used in hair transplants, in intraoperative markings. The mandrel was used as a wire for sterile toothpick handling in different surgical marking procedures, such as those in abdominoplasties, mammoplasties, and rhytidectomies. The use of this instrument offers a comfortable, affordable, precise, and low-cost tool for all types of surgical marking performed in plastic surgery. It is cheaper and more efficient than disposable pens.

Keywords: Surgical instruments; Reconstructive surgical procedures; Abdominoplasty; Mammoplasty; Rhytidoplasty.

RESUMO
Este artigo descreve a adaptação de um mandril de micro-punch - normalmente empregado em transplantes capilares - para uso em marcações intraoperatorías. O mandril foi usado como cabo para manuseio de palitos de dente esterilizados nas demarcações de procedimentos cirúrgicos diversos, como abdominoplastias, mamoplastias e rhytidoplastias. O emprego deste instrumento oferece um meio confortável, acessível, preciso e de baixo custo para todos os tipos de marcações cirúrgicas em cirurgia plástica, sendo mais barato e eficiente do que canetas demarcatórias descartáveis.

Descritores: Instrumentos cirúrgicos; Procedimentos cirúrgicos reconstrutivos; Abdominoplastia; Mamoplastia; Ritidoplastia.
INTRODUCTION

Preoperative surgical marking is an important routine in most plastic, aesthetic, and reconstructive procedures. The literature shows that the concern about the durability of the markers used preoperatively or intraoperatively is no longer relevant, as the best marking methods have been described in several studies along with the best tools and dyes. However, much less attention was given to developing an efficient system for intraoperative marking. A small number of articles discuss this step, which is key in different procedures owing to the inevitable fading of preoperative markings caused by degeneration and preoperative application of antiseptic solutions, manipulation of the surgical site, and skin contact with fluids and secretions of the patient while performing the surgery. Moreover, in many procedures, a new intraoperative marking needs to be developed or previously drawn markings need to be modified, in view of possible changes or additions to incisions initially planned.

Sterile plastic pens with a felt tip became an option that gained some popularity. However, the use of these tools results in additional costs to each procedure, as they are not reusable. Moreover, they tend to fail during surgery, as the felt becomes saturated with the fluids released by the body of the patient and the moisture of the skin itself. Therefore, more than one pen is often required in the same surgery.

A cheap and widely available alternative to intraoperative markers is the use of sterile toothpicks embedded in biocompatible dyes such as methylene blue, brilliant green, or gentian violet. One of the difficulties found in using this method is the lack of ergonomics in toothpick handling, which is normally too small for a comfortable and precise use in drawing the markings. Holding the toothpicks with Kelly or Allis surgical forceps contributes little to reduce this limitation. Moreover, toothpick fractures, caused by the forceps itself, are frequent.

OBJECTIVE

This study presents an efficient and low-cost option to drawing markings during surgery, combining the good accessibility of toothpicks, ergonomics, and accuracy of a surgical instrument.

METHODS

A micro-punch mandrel (Richter Surgical Instruments, São Paulo, SP), which is normally used in hair transplants, has been adapted to be used as a wire for toothpick handling (Figure 1). The toothpick is inserted in the mandrel, which has a thread for the proper fit and hold of the toothpick. The length of the mandrel is 6.45 cm, but the addition of a common toothpick results in a mandrel-toothpick assembly of 11.14 cm long, which is close to that of a regular ballpoint pen (Figure 2).

Therefore, the mandrel-toothpick assembly can then be soaked in biocompatible dyes and handled like a pen, while performing the markings during surgery (Figure 3).

RESULTS

The instrument described has been used in all types of surgical procedures that have been performed by our team. The tool provided satisfactory results in terms of increased accuracy of intraoperative markings, comfort in handling the tool, and absence of toothpick fractures while drawing the markings.
assembly of this tool seems a bit laborious and involves risks inherent to the use of sharp material during its preparation and use. However, it is worth mentioning that the authors point at disposable pens as an unattractive alternative because of their high cost, low efficiency, and durability.

The same point of view was supported by Boettcher and Komorowska-Timek in a recent publication, in which they propose the disassembly of a sterile marking pen and the use of its cartridge only as a marker during surgery. This idea seems quite effective but requires the use of at least one disposable pen per procedure. In addition, it has the disadvantage of producing too thick drawing strokes, which can impede the realization of more delicate and accurate markings.

CONCLUSION

The use of a micro-punch mandrel with sterile toothpicks offers a low-cost, affordable, and long-lasting alternative, as it consists of widely available tools that do not require major changes to be used in preoperative markings. According to how these are performed or elaborated, the marking should start by using a drawing method that is quite familiar to most plastic surgeons and can be used in all types of intraoperative marking. The result is an accurate, ergonomic, and economic marking method, which benefits the surgeon, the patient, and the hospital.

COLLABORATIONS

GFS Data analysis and interpretation; statistical analysis; conception and study design; implementation of surgical procedures and experiments; writing of the manuscript; and final approval of the manuscript.

INS Aid in preparation of the figures; critical review of the content; and final approval of the manuscript.

REFERENCES


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