

Case Report

Laparoscopic Cholecystectomy with Freehand Laparoscopic Camera Controller

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ABSTRACT: Introduction: Free hand laparoscopic camera controller (FHLCC) is a new innovative robotic device that has been recently implemented and adopted in laparoscopic surgery, providing the surgeon more comfort in carrying out his surgical skills without the difficulties related to the mutual understanding of the movements of the camera. Case presentation: We report the first case of laparoscopic cholecystectomy performed in our hospital with the aid of the free hand laparoscopic camera controller. Conclusion: Free hand laparoscopic camera controller provides the surgeon comfort in carrying out his surgical skills without the difficulties related to the mutual understanding of the movements of the camera. It combines the benefits of minimally invasive and robotic assisted surgery, increases efficiencies and improves patient recovery times.

KEYWORDS: free hand laparoscopic camera controller (FHLCC), solo-surgery, steady image

Introduction

Robotic technology has become an integral part of minimal invasive surgery [1,2].

The term robot firstly proposed to the scientific community by the Czech playwright Karel Capek in 1921.

Since then there have been constructed many robotic machines which find application in surgical practice.

Some famous robots such as Zeus, da Vinci and others aren't currently in wide usage due to the high financial cost that they imply [3,4].

Free hand laparoscopic camera controller (Fig. 1) constitutes a simpler and smaller robotic machine of last decade, allowing surgeons to perform laparoscopic surgery with a "hands free" technique [5].

It provides the ability of performing solo surgery without the need of camera assistant and tremor free visual image [6,7].

Laparoscopic solo surgery with the aid of FHLCC is also widely used in war conditions as part of military surgery due to lack of necessary number of surgeons to perform a laparoscopic surgery [8].

The aim of this study is to present the first case of laparoscopic solo surgery with the aid of FHLCC performed in our hospital.

Case report

A 51 years old male patient suffering from cholelithiasis was admitted to our clinic for a scheduled laparoscopic cholecystectomy and there was implemented the first usage of freehand laparoscopic camera controller in our hospital.

The operation was performed by only one surgeon, without any assistants (Fig. 2).

The surgeon followed a three port-laparoscopic technique and the FHLCC was placed in the umbilical port, giving him the ability to have a direct control of the scope position.

The camera controller is a hands free device that was attached to the surgeon's cap.

An indicator unit, attached on the monitor, showed the direction selected for the scope movement.

The surgeon selected the direction of tilt and pan with head movements while the scope was held stationary until the surgeon initiated a new head movement (Fig. 3).

The visual image of the surgical field presented completely stable with a rock steady visualization ("tremor free").

The operation was uneventful and the duration of it was 50 minutes.

The patient had good postoperative course and he was discharged on the first post-operative day.

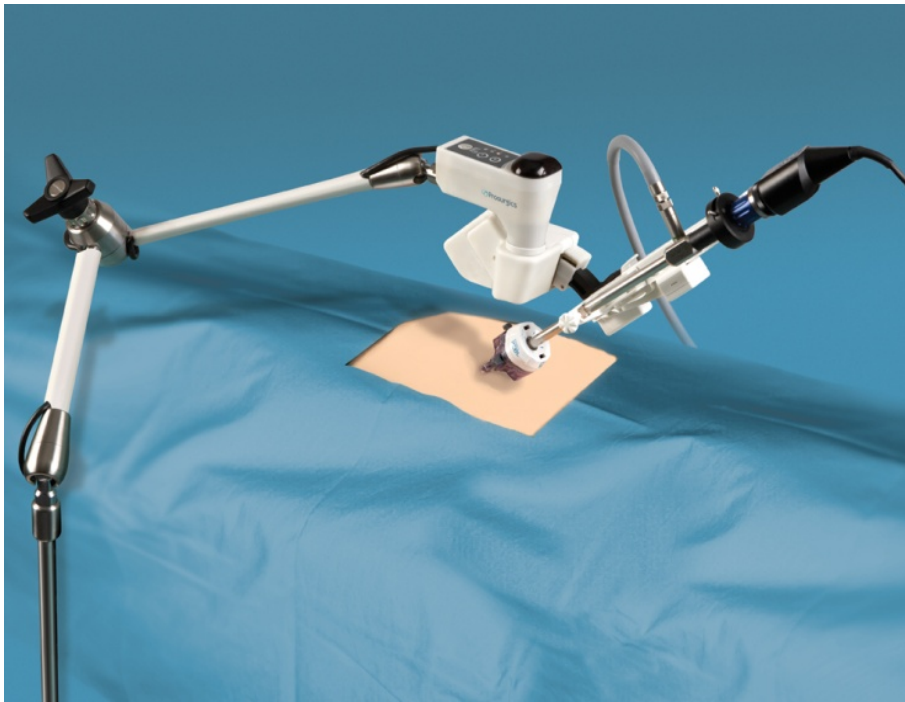


Fig.1. The Free Hand Laparoscopic Camera Controller



**Fig.2. The operation was performed by only one surgeon, without any assistants.
The FHLCC was placed in the umbilical port**

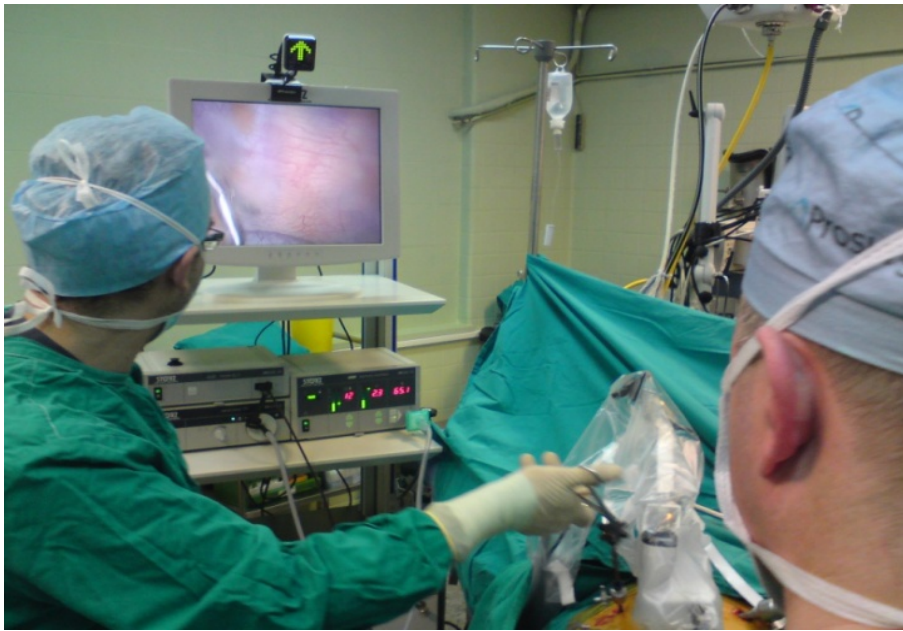


Fig.3. An indicator unit, attached on the monitor, showed the direction selected for the scope movement

Discussion

Free hand laparoscopic camera controller is a new robotic device in laparoscopic surgery of last decade [1,2,8].

FLLC can provide many advantages to the surgeon and its efficiency in performing a surgery is much better than this with a camera assistant.

Firstly, the surgeon has a direct connection to the scope and an immediate and precise control of scope position.

Camera controller provides wide range of movements and a high speed control of the laparoscope with a high gradation of speed available to the surgeon.

The visual image of the surgical field is absolutely stable without the tremor of the camera assistant (“rock steady image”) [6,7].

Surgeon has also the ability to perform a solo-surgery without any difficulties related to mutual understanding of the movements of the camera.

The overall cost is lower compared to conventional laparoscopic surgery as there is no need of camera assistant while the average surgery time is reduced.

Advantages

- Direct connection between the surgeon and the scope
- Immediate and precise control of scope position
- Wide range of movements

- Rock steady image
- More space for the surgeon
- Solo-surgery
- Reduction in personnel cost
- Reduced average case time

Conclusion

FHLCC is a safe innovative laparoscopic method. Surgeon enjoys a stable and accurate visualization and performs a solo-surgery in less surgical time.

Although the overall cost of each surgery is lower with the usage of FFLCC, it remains yet an expensive method because of the high cost of the device.

We believe that in the future laparoscopic surgery FHLCC will be the gold standard for all laparoscopic surgeries, providing the surgeon all the advantages mentioned above.

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