

## Arthroscopic needle knife for knee video arthroscopic surgical portals

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### Abstract

**Introduction:** A new era of orthopedic surgery is happening nowadays. innovative procedures like video surgery; Ultrasound Guided Interventions; Pain interventionist orthopedics procedures; plastic surgery (cellulites subcision treatment); hydrodissection injections; dry needling; thermography assisted pain procedures and acupuncture started to be widely performed [3].

**Objective:** The aim of the research is to assess the possibility of a needle knife surgical device to perform portals of knee video arthroscopic surgical interventions and to evaluate the two diferentes needle-knife surgical devices [7-9].

**Method:** 200 consecutive knee Video Arthroscopies performed by the same team were divided in two groups: A and B.

Group A: the lateral portal used a hypodermic needle 40X12 (18Gx 1'1/2) for portal performance.

Group B submitted a lateral portal using a metal guide for intravenous catheter 14Gx2".

The medial portal, a 11 blade knife, was used for both cases. Comparison of two groups by assessing wound healing time; superficial and deep infection; pain, cosmesis by a third person nurse. A surgeon's opinion for friendly use comparing group A or B was made [8, 9].

**Results:** There were nor superficial or deep knee infections. No wound healing problems, same time of healing. No difference in pain related to the wound. Cosmesis were similar. The surgeon's choice was the metal guide for intravenous catheter 14Gx2" is more friendly due to the rigidity in comparison to a hypodermic needle 40X12 (18Gx 1'1/2).

**Conclusion:** The two needles seem suitable for knee video arthroscopy surgical interventions. The surgeon's choice was the metal guide for intravenous catheter 14Gx2" is more friendly due to the rigidity in comparison to the 40x12 needle [7-9].

**Keywords:** Knee, Video Arthroscopy, Portals, Needle Knife Surgery

### Introduction

A new era of orthopedic surgery is happening nowadays. innovative procedures like video surgery; Ultrasound Guided Interventions; Pain interventionist orthopedics procedures; plastic surgery (cellulites subcision treatment); hydrodissection injections; dry needling; thermography assisted pain procedures and acupuncture started to be widely performed [3-6].

### Objective

The aim of the research is to assess the possibility of a needle knife surgical device to perform portals of knee video arthroscopic surgical interventions and to evaluate the two diferentes needle-knife surgical devices.



**Figure 1:** Two different devices for portal in video knee arthroscopies by using a metal guide for intravenous catheter 14Gx2” and the lateral portal used a hypodermic needle 40X12 (18Gx 1’1/2).

The aim of the research is safety; efficacy and viability assessment of portals performance by using two different devices for portal in video knee arthroscopies by using a metal guide for intravenous catheter 14Gx2” and the lateral portal used a hypodermic needle 40X12 (18Gx 1’1/2) [7-9].

### Method

200 consecutive knee Video Arthroscopies performed by the same team were divided in two groups: A and B. Group A: the lateral portal used a hypodermic needle 40X12 (18Gx 1’1/2) for portal performance. Group B submitted a lateral portal using a metal guide for intravenous catheter 14Gx2”.

The medial portal, a 11 blade knife, was used for both cases.



**Figure 2:** Group A: the lateral portal used a hypodermic needle 40X12 (18Gx 1’1/2) for portal performance. Group B submitted a lateral portal using a metal guide for intravenous catheter 14Gx2”. The medial portal, a 11 blade knife, was used for both cases.

Comparison of two groups by assessing wound healing time; superficial and deep infection; pain, cosmesis by a third person nurse.

A surgeon’s opinion for friendly use comparing group A or B was made.

The operative wound was assessed by a third person (Nurse) in the follow up after 5, 8, 10 e 15 days until the suture removal.

The wound was assessed by redness (rubour); wound dehiscence;

discharging and suture removal time. Only the arthroscopic wound was assessed.

Comparison of two different needles used as knife on knee arthroscopic portal scalpel were made by assessing wound healing time; superficial and deep infection; pain, cosmesis and surgeon opinion for friendly use [7-9].

### Results

200 knees were performed. There were 61% men and 39% women.

70% simple arthroscopies and 30% Anterior Cruciate ligament Repair. The mean age was 46 years old, age variation from 21 years old to 76 years old. No wound healing events occurred.

### Statistical Significance

100 knee arthroscopies were assessed in group A and 100 knee arthroscopies were assessed in group B.

There were nor superficial or deep knee infections. No wound healing problems. Same time of healing. No difference in pain related to the wound. Cosmesis were similar.

The surgeon's choice was the metal guide for intravenous catheter 14Gx2" is more friendly due to the rigidity, more stability, and more cutting edge surface in comparison to a hypodermic needle 40X12 (18Gx 1'1/2) due to be longer, thicker and bigger than the hypodermic needle. .

### Discussion

Needle Knife is more used for gastrointestinal surgery. Few reports using Needle Knife in Orthopedics are made; especially in Chinese literature [3-9].

Application of a hypodermic needle 40X12 (18Gx 1'1/2) has been used successfully at Hospital Lariboisiere, in Paris, by Jean Lermusiaux,MD (French rheumatologist) Dupuytren's percutaneous treatment using a needle knife. The same surgical method has been used in several medical services throughout the world. <sup>2</sup>

During my medical training in Brazil, busy hospitals faced shortage of basic equipment in the casualty department. Most of them due to logistic issues. It was evidence-based practice to use a 'pink needle' "for abscess drainage, small incisions, and suture removal". Based on this evidence-based practice, this needle-knife was developed by Ravaglia & Cliquet and presented in papers of 2011 and 2012 on An Arthroscopic Needle-Knife Surgical Prototype Device (ANKSD) [2] in Prague at TWC 2011 [2] and in Dubai at OWC 2012. They presented a prototype of a needle-knife for orthopedic procedures based on an 18G11/2 needle [3-9].

The usage of a needle instead of a knife sounds awkward; but if you have different devices to slice a cheese like knife; wires; prairies and so on with at least the same precision. The same way for bone cutting there are different devices like giglis' wire, oscillating and reciprocating saw with at least similar results [1].

In this research it was compared two different needles to be used as a knife for arthroscopic portal approach.

It was compared a hypodermic needle 40X12 (18Gx 1'1/2) shorter; thinner and smaller to the metal guide for intravenous catheter 14Gx2".

The second device is longer, thicker and bigger than the previous one. This gives more stability, rigidity and more cutting edge surface.

The advantages of using a needle knife is due to the short bisel layer by layer precisely being open avoiding neighborhood tissue damage, such as cartilage. It is not necessary to replace a knife after finding the optimum cutting portal place as it is being used for several surgeons worldwide [10]. This method is multifunctional for cutting; aspiration and injection at the same device. Maybe less costly than using more than one instrument [3-9].

### Conclusion

The two needles seem suitable for knee video arthroscopy surgical interventions [7, 8].

The surgeon's choice was the metal guide for intravenous catheter 14Gx2" is more friendly due to the rigidity in comparison to the 40x12 needle [7, 8].

This method is multifunctional for cutting; aspiration and injection at the same device. Maybe less costly than using more than one instrument.

### References

1. Leech C, Porter K (2016) Man or machine? An experimental study of prehospital emergency amputation. *Emergency Med J* 33(9).
2. Lermusiaux JL, Badois F, Lellouche H (2001) *Maladie de Dupuytren*; *Revue de Rhumatisme* 68(6):542-547.
3. Ravaglia FFA, Cliquet Jr A (2022) Developing A Needle-Knife Surgical Device for Ultrasonic Assisted Surgery. *Int J Ortho Res* 5(2):92-96.
4. Ravaglia FFA, Cliquet Jr A (2022) Developing A Needle-Knife Surgical Device. *Intern Jour psych* 7(1):14-20.
5. Ravaglia FFA, Cliquet Jr A (2022) Developing and Initial Testing for an Arthroscopic Needle-Knife Surgical Device (ANKSD) Prototype. *Research Review: J Medical Health Sciences* 11:5-12.
6. Ravaglia FFA, Cliquet Jr A (2022) Developing A Needle-Knife Surgical Device. *Virtual Even-3.rd Advanced Material Science World Congress held March 21-23, 2022 Distinguished Speaker Oral Presentation.*
7. Ravaglia FFA, Cliquet Jr A (2015) Paper number: 39394 "Comparison of two different needles used as knife on knee arthroscopic portals scalpel procedures.18/09/2015 XXVI SICOT Triennial World Congress Guangzhou, China.
8. Ravaglia FFA, Cliquet Jr A (2011) Arthroscopic Needle-Knife Surgical Device (ANKSD); Prague TWC 2011, 29714; CR.
9. Ravaglia FFA, Cliquet Jr A (2012) Arthroscopic Needle-Knife Surgical Device (ANKSD) Prototype; OWC 2012, 33138; Dubai UAE.
10. Ward BD, Lubowitz JH (2013) Basic Knee Arthroscopy Part 2: Surface Anatomy and Portal Placement. *Arthrosc Tech* 2(4): e501-502.

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