

**Frameless stereotactic brain tumor biopsy :
a consecutive series of 63 cases with a new
holder (TENETOR) and real-time histological
examination (the pathologist is in operative
room to steer the procedure).**

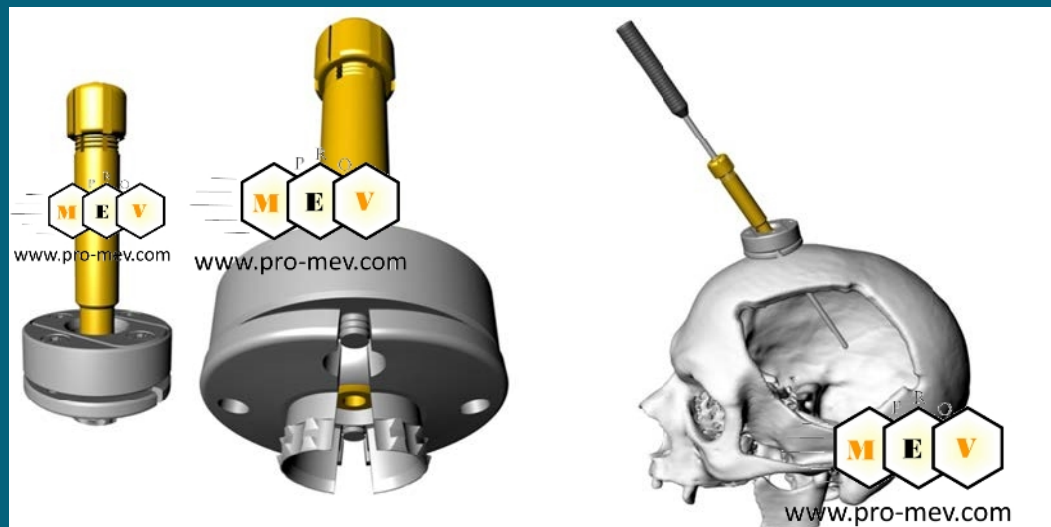
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Interim Meeting , Rome 2015

The speaker is also the creator
of the medical device in question

We propose a **new holder device**
useful for frameless brain biopsy



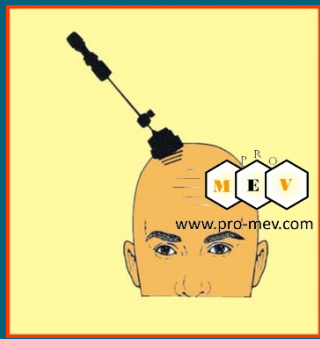
On selected pathologies of brain tumors, where the study with MRI and PWI is not nullifying and where the radiologic patterns may be misleading, the brain biopsy is needed, for histological examination, cytogenetic, and molecular diagnosis, useful for customizing the treatment of malignant brain tumors.

The biopsy may help identify lesions that do not require surgical treatment, or diagnose patients who are poor surgical candidates so they can pursue other appropriate therapies.

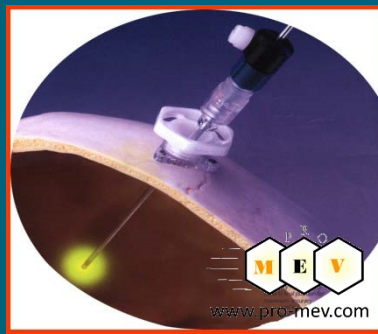
The use of the **neuronavigation**, associated with the **different holders**, has now almost completely replaced the frame-based stereotactic procedure for the brain biopsy.

Today, the **frameless brain biopsy** is performed,
with the aid of different types of **holder**,
according to the needs, experiences and beliefs
of each neurosurgeon.

There are several devices. Here are the main:



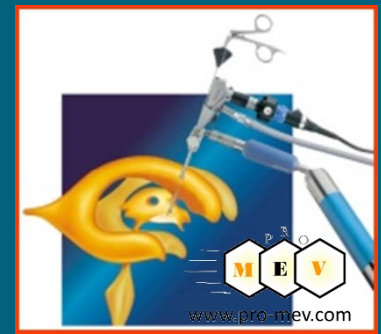
pajunk



trajectory guide



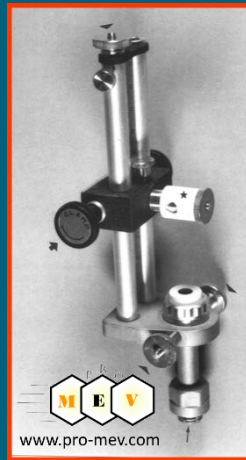
flexible holding arm



unitrac



neuropilot



mechanical stabilizer



vario guide

robotic systems



- often structurally weak
- assembly complicated and time-consuming
- risk of intraoperative mobilization, particularly
the external arms
- often expensive

We have identified **2** critical problems in the brain biopsy procedure:

1- Holder's structure and assembly time

2- Histopathological examination of tissues

The mean time of surgery is 90 minutes (range 60'-120') including patient positioning, registration procedure and a histologically confirmed biopsy (frozen diagnosis)

The final pathology report, requires 3-4 days

Purpose:

- 1-Simplifying the procedure with special kit
 - 2-Reduce surgical times (40' vs 90 ')
 - 3-Histological provisional report in real time
 - 4-More comfort for the patient
 - 5-Avoid the brain biopsy without histopathological confirmation
- (To reduce errors due to the low amount of tissue biopsy, or because out of the target)

With our experience we give the following answer with 2 key features :

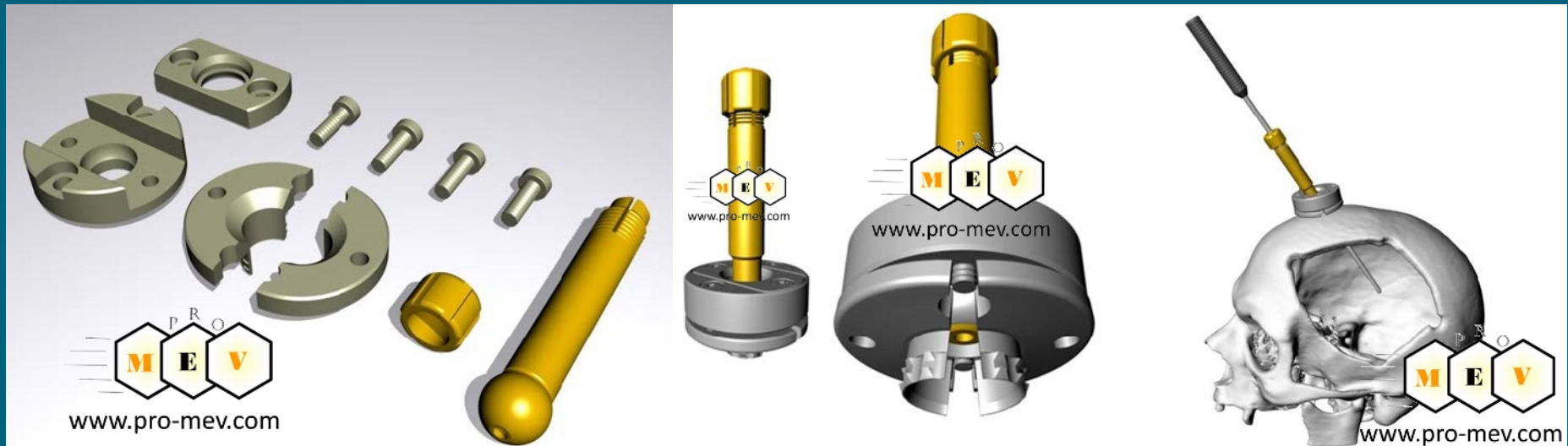
1-the use of **Tenector**, new holder versatile (short learning curve) reusable, autoclavable

2-the presence in the operating room of the pathologist, to steer the biopsy.

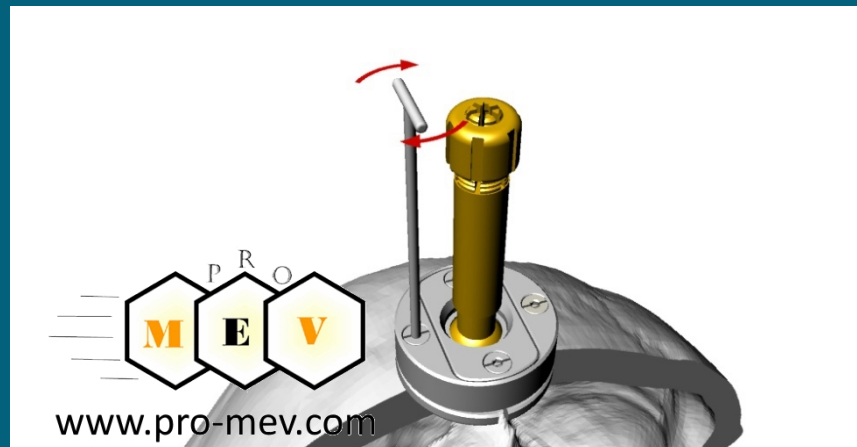
For several years we are using a versatile
and reusable holder

TENETOR

Holder for brain Biopsy and Endoscopy



The **Tenetor**, for its **strong fixation to the skull** and its options, allows the use of **all types of biopsy needles** (Nashold, Sedan...) as well as **all types of endoscopes** of different shape and diameter.



The assembly of the **TENETOR**



open claws for fixation
to the skull

TENETOR



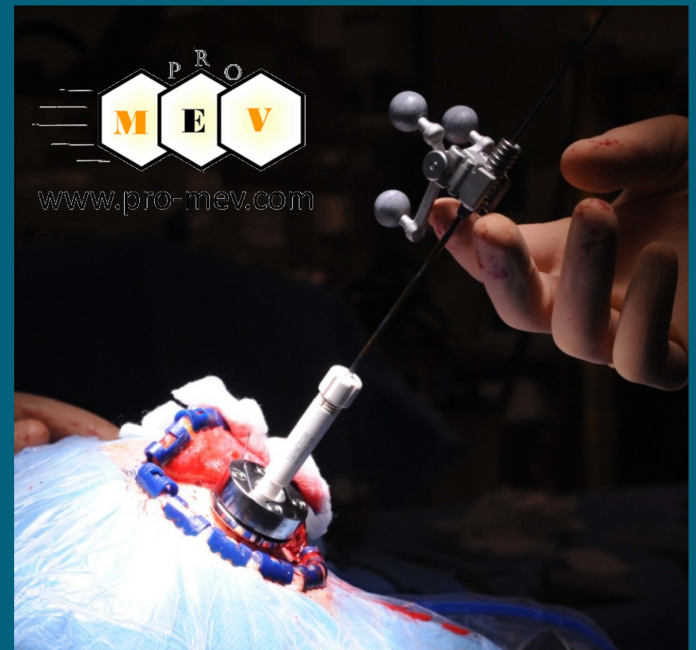
more degrees of tilt ($\pm 35^\circ$)

Il TENETOR si fissa all'interno del foro di trapano mediante un particolare meccanismo che permette di scegliere inclinazioni fino a 25°



www.pro-mev.com

Strumento semplice intuitivo versatile per procedure di biopsia e di endoscopia cerebrale CT guidate



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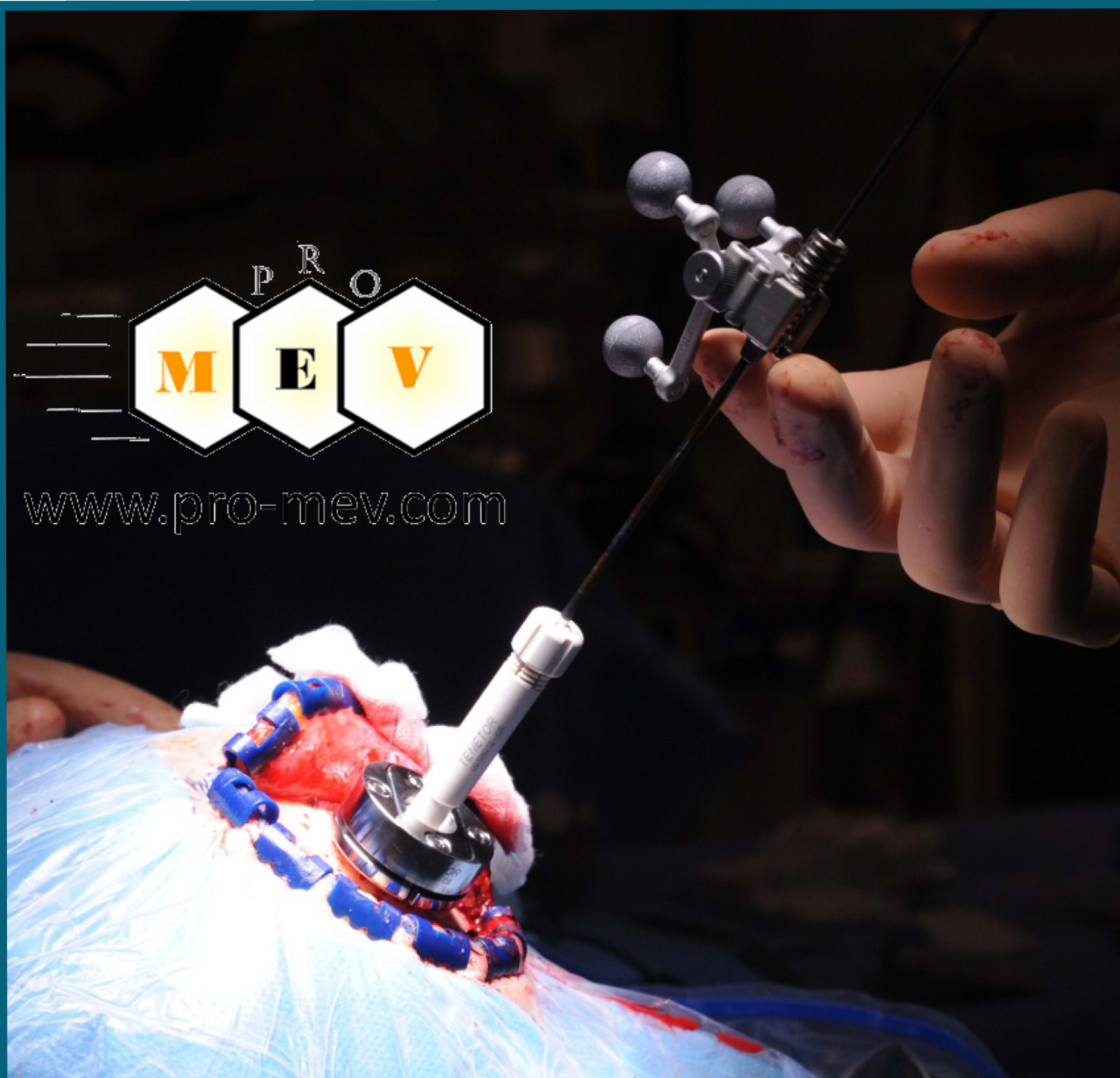
The cytology specimens, are **immediately set up** with the **technique of “squashing”** and stained with **toluidine blue** method (**no frozen section**) and immediately examined under an optical microscope by the pathologist who will provide the neurosurgeon information about the **adequacy of the samples**, the **representative area** of the lesion and the pathological **features**, expressing a **provisional** cytological diagnosis to be confirmed histologically.

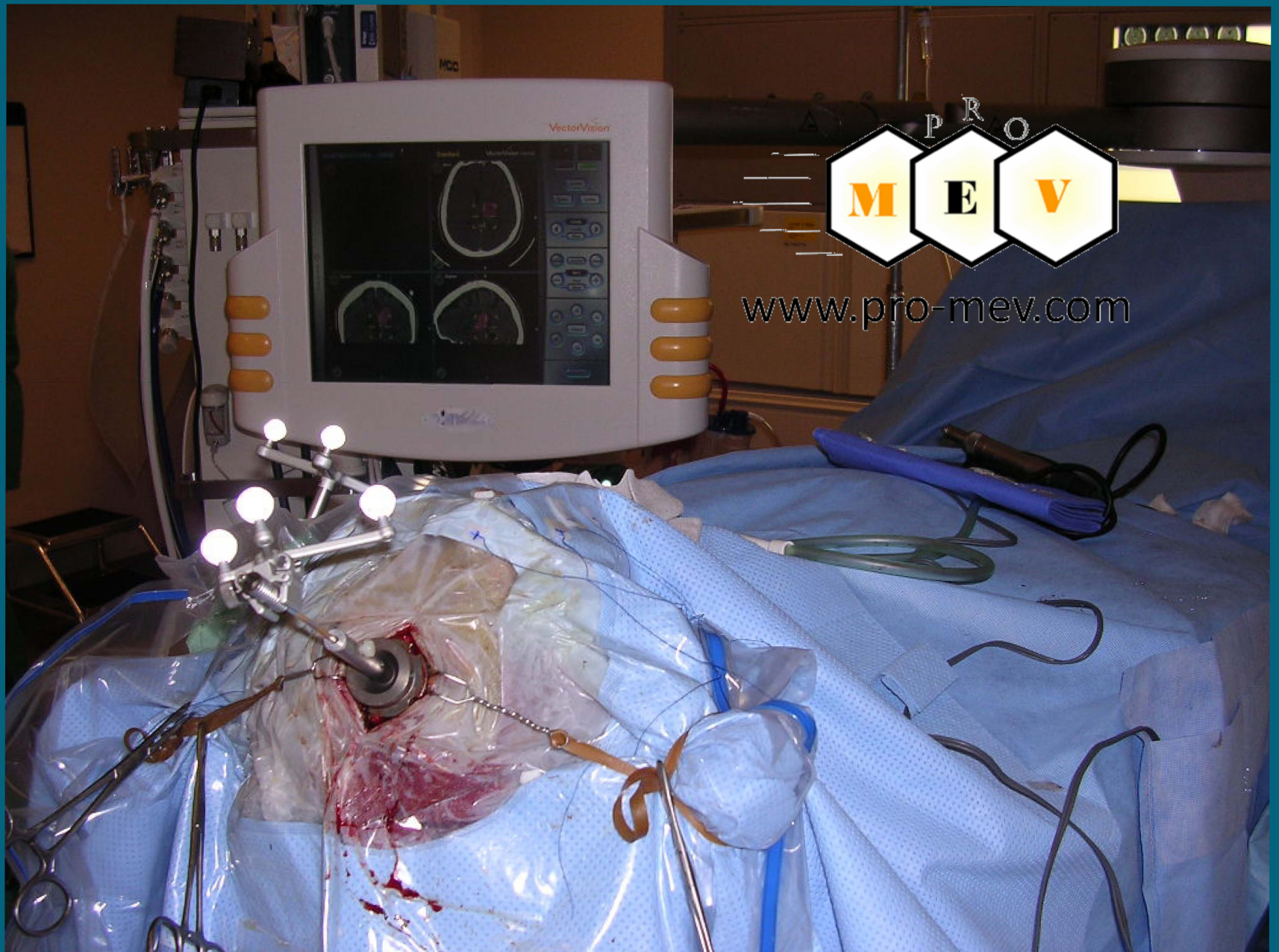
The diagnostic experience gained over the years has allowed us to refine the cytological diagnostic technique in real time, until we got a very high percentage (95-97 %) of correlation between the intraoperative diagnosis and the final histological report.

In the ideal situation we obtain 4 specimens of tissue at the same target, rotating the biopsy needle at 0° , 90° , 180° 270° ; in most cases samples will be taken in more than one target site (at different depths)



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Our experience with **Tenetor**

2011- 2014

63 frame-less brain biopsies

19 endoscopic procedures

ADVANTAGES :

Less time surgery

More safety

More degrees of tilt

Less cost

Reusable

Useful for all procedures:

brain biopsy and endoscopy for hands free

Thanks for your attention

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