Setting-Up A Skull Base Laboratory: A Wise Investment

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Abstract

‘An investment in knowledge pays the best interest.’ -- Benjamin Franklin (1706-1790)

Skull base surgery is an exciting growing subspecialty with advances in the research, clinical, and surgical realms. Undeniably, the advancement of this subspecialty and its impact on the practice of neurosurgery could be further magnified by setting-up several skull base laboratories (SBL).[1] But what are really the advantages of being trained in such a laboratory? Learning, research or both?

Let’s take the Microneurosurgery Skull Base Laboratory of Weill Cornell Medical College (WCMC, New York, NY, USA) as an example (Figure 1).[2] In its website it is clearly stated that the three-dimensional SBL helps residents acquire dexterity with surgical instrumentation through limited corridors containing vital structures, teaching them how be proficient not only with the complex anatomy but also with the tools to be used.

The specific SBL pursues several research and educational objectives: adequate preoperative training and rehearsal of complex approaches to the skull base (SB); acquisition of visuo-spatial skills required to navigate through various SB neurosurgical approaches; investigation of new surgical routes to access intracranial targets.

These objectives are met with the aid of exquisite cadaveric dissections (Figures 2 and 3), 3-D visualization (Figure 4), virtual reality (interactive virtual dissection, IVD), and computerized simulation.

To conclude, SBL allows neurosurgeons to practice operations in an environment in which mistakes have no fatal consequences, minimizing the risk associated with training on living humans, establishing standards and optimization of specific procedures. Thus, both teaching and research is facilitated. All the above render SBL a well justified cost-effective wise investment.

Figure 1

Figure 1. A working station at WCMC skull base laboratory.

Figure 2

Figure 2. Endoscopic image of a skull base in a fresh cadaveric head.

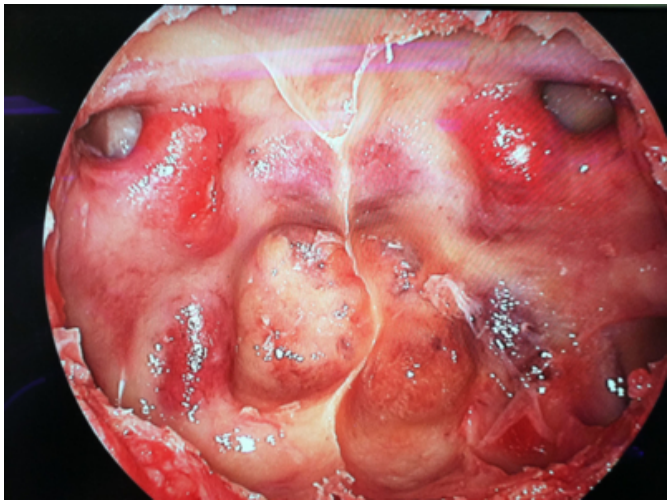

Figure 3

Figure 3. Dissection of a silicone-injected cadaveric head

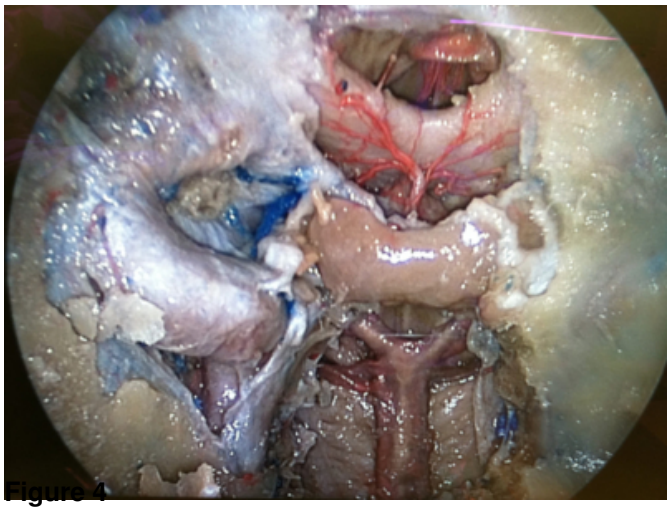

Figure 4

Figure 4. Dextroscope® (Bracco Diagnostics Inc., New Jersey, NY, USA) for seeing and interacting with volumetric images

References

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