

A Portable Device to Record Live Surgeries: The Versatile Tripod

Canlı Ameliyat Kaydı Sırasında Kullanılabilecek Portatif Bir Aparat: Versatil Tripod

Emin Kapi

Clinic of Plastic Reconstructive and Aesthetic Surgery, Adana State Hospital, Adana, Turkey

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Dear Editor,

Capturing live video recordings of surgeries is a practice gaining importance today.¹ Especially, in scientific conventions, video recordings of surgical procedures are much more informative than verbal descriptions or poster presentations.²⁻⁵ Various methods are currently in use to make video recordings.^{1,3} The methods and types of camera to be used are chosen according to the type of the procedure.¹ Among these methods, cameras mounted on the surgical light head, mini cameras mountable on the surgeon's head, or video recording by a person other than the surgeon are observed.^{1,3,4} However, limitations like the need for technical equipment, artefacts caused by the movements of the camera while recording, associated costs, and need for additional personnel complicate this practice. Particularly, when the operating room (OR) staff are under a heavy workload, the recording process may become both time consuming and distracting for the surgeon.^{1,3} Therefore, there is a need for a method with a camera manipulated directly by the surgeon. In this article, the characteristics of an alternative device, the custom-made versatile tripod, are presented.

In the cases included to this study, taken for informed consent.

The device comprises two camera tripods. The larger professional tripod with a greater mass is set as instructed. Subsequently, the second lightweight aluminium-alloy tripod is mounted and fixed at the top of the main tripod at an approximately 60° angle. Thus, a mechanism with a camera at the tip of the upper tripod reaching toward the lateral aspect of the lower main tripod's location is set (Figure 1).

The turning angle of the designed tripod mechanism is 360° at every plane, its vertical movement range is approximately 2 m, and the lateral reach is about 1.5 m (Figure 2). Thus, the device is set at a safe perimeter from the sterile surgical area, and after the focus and zoom is adjusted, a close-range video of the surgical site can be made (Figure 3). For instance, a basal view can be obtained during rhinoplasty operations from the lower end of the operating table (Figure 4) as well as a lateral view during otoplasty (Figure 5) or a direct view during blepharoplasty can be obtained (Figure 6). Because the system is very versatile and adjustable to suit a number of angles, it is useful in aesthetic and reconstructive surgery.

Another advantage of the custom-made tripod is the possibility to adjust the camera angle and distance through the camera arm or remote control covered in sterile drape without any additional staff in the OR. Because the device has two camera slots, it gives the advantage to simultaneously record both a close-up view and a wide-angle view. The stable recording platform on the tripod reduces recording artefacts to a minimum. Directing the screen of the camera toward the surgeon or reflecting the image on an external monitor, the surgeon can observe the recording in real time and adjust the angle when necessary.

The weight of the lower component, which is heavier than the upper component of the custom-made tripod, prevents the center of gravity from shifting laterally after the camera is installed and avoids balance problems. Still, in case the camera is very heavy, extra weight may be added to the main body.

Correspondence Author/Sorumlu Yazar: Emin Kapi, MD E-mail/E-posta: eminkapi@gmail.com



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Figure 1. The versatile tripod

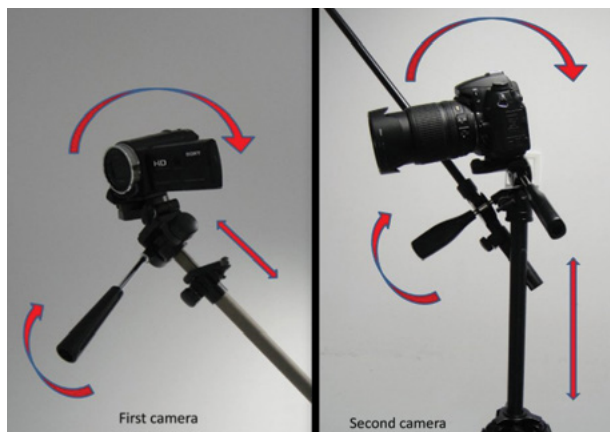


Figure 2. The view of the angles of motion at different joints of the versatile tripod



Figure 3. Close-up view obtained from a far distance from the surgical area using the versatile tripod



Figure 4. Basal view during rhinoplasty using the versatile tripod

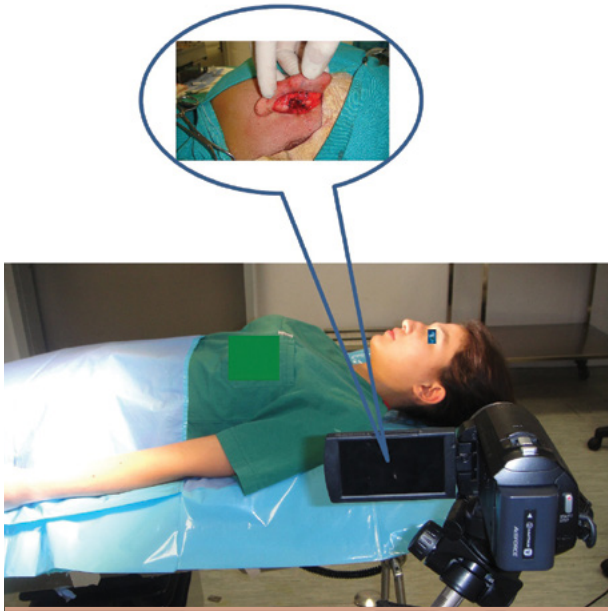


Figure 5. Parallel view to the surgeon's vantage point during otoplasty



Figure 6. Vertical view during blepharoplasty using the versatile tripod

The versatile tripod may be regarded as a practical and low-cost device, which can be used in all types of plastic, reconstructive, and aesthetic surgeries with great adaptability to the surgical site and allows the adjustment of the camera angle and direction during surgery when necessary without requiring additional personnel or breaking sterility.

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