

# Regulating Negative Pressure in Closed Suction Drains after Neurosurgical Procedures: An Out-of-the-Box Approach

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Indian J Neurosurg 2021;10:266–267.

Closed-suction drainage systems are commonly used in neurosurgery. The aim of subgaleal placement of these drains is evacuation of possible bleeding after craniotomy. However, sudden application of suction to the subgaleal drain at the end of surgery can infrequently lead to occurrence of bradycardia, and even asystole, if the negative suction is not removed promptly.<sup>1,2</sup> While the commercially available suction drains do have a clamp at the connecting tube to promptly activate/deactivate suction (► **Fig. 1**), they do not have any regulator to manipulate the amount of suction applied. We describe the use of roller clamp of a blood administration set to regulate the amount of suction applied by closed suction drains, possibly reducing the incidence or even prevent occurrence of bradycardia and asystole.

The rolling clamp of a blood administration set (Umaflow; Royal Surgicare, Gujarat, India) is taken and the multiperforated catheter of closed-suction drainage system (Romovac; Romsons Scientific and Surgical Industries Pvt. Ltd., India) is passed through it. With the rolling clamp closed, the catheter is then connected to connecting tube and bellows (► **Fig. 2**). Then the rolling clamp is slowly opened while looking for occurrence of any bradycardia. This arrangement allows controlled application of negative suction to the drain so that bradycardia does not occur. Otherwise, the amount of negative suction applied can be altered only after opening and reapplying the bellows, which is both cumbersome and time consuming.

Sudden application of negative suction to drainage systems is said to cause intracranial hypotension, which can cause rostral migration of the brain and brainstem and



**Fig. 1** A normal suction drain. there are no means of regulating the negative suction applied.

manifest as bradycardia, hypotension, and even asystole. The modification used by us helps to regulate the amount of negative suction applied and may prove to be helpful in

**published online**  
April 29, 2021

**DOI** <https://doi.org/10.1055/s-0041-1729460>  
**ISSN** 2277-954X

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**Fig. 2** A rolling clamp of intravenous set is being used to regulate the suction applied by the surgical drain.

decreasing the complications associated with its use. Gradual application of suction to drains after craniotomy decreases complications and our method provides a means for application of precise negative suction gradually.<sup>2,3</sup> Our experience of the use of rolling clamp to regulate negative suction applied has been promising; however, this being a novel concept, there is presently scant literature to definitively prove its effectiveness. We suggest further research for better understanding of this phenomenon and its prevention.

#### **Funding**

None.

#### **Conflict of Interest**

None declared.

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