

# Visual Loss, Venous Congestion

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**Postoperative visual loss (POVL)** has been a focused area of research in anesthesia, ophthalmology and surgery since the late 1990s. The ASA POVL Registry previously reported on 83 POVL cases caused by ischemic optic neuropathy (ION) after spine surgery.<sup>1</sup> Two of the most common factors associated with these cases were the prone position and prolonged duration of anesthesia. Based on these findings, and the knowledge that central venous pressure increases in the prone position,<sup>2</sup> experts suspect that the prolonged presence of elevated venous pressure in the head may be one of the most important causative factors for this complication in spine surgery patients. ION associated with bilateral radical neck dissections and venous congestion in the head provide further supportive evidence for this theory.<sup>3</sup>

More recently, there has been a rapid increase in the number of robotic-assisted laparoscopic prostatectomies (RALP) being performed in the steep Trendelenburg position for prolonged durations. This procedure has raised concern that the prolonged elevation of venous pressure in the head may place it at high risk for development of ION as well. Several case reports of ION already existed with open radical prostatectomies where there is a mild head-down tilt. The RALP patients are sometimes placed in 60 degrees of Trendelenburg position for excessively prolonged durations, particularly as surgeons go through the steep part of their learning curve.<sup>4</sup> Additionally, insufflation of the abdomen for laparoscopy may further increase intra-abdominal and central venous pressure, compounding the problem. The significant venous congestion of the head and resulting facial swelling in these cases is reminiscent of prolonged spine surgery in the prone position.



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Because of this concern, we reviewed the ASA POVL Registry to identify cases of ION associated with prostatectomy. Results from the analysis discussed here were presented at the ASA 2010 Annual Meeting in San Diego.<sup>5</sup> All cases of ION associated with prostatectomy were identified from a database of 175 POVL cases occurring between 1987 and 2010. We compared the perioperative factors between the prostatectomy ION cases and 83 spine surgery ION cases from the same database.<sup>1</sup> Statistical analysis was performed using Fisher's exact test for proportions, and t test and Mann Whitney U Test with exact p-values by permutation test for continuous variables.

*“The ASA POVL Registry continues to collect cases of POVL occurring after any non-ocular surgery and has a heightened interest in acquiring POVL cases associated with prostatectomies.”*

Six cases of ION after prostatectomy were identified (see figure). No significant differences in ASA status or co-existing diseases were found between prostatectomy and spine cases. Anesthetic duration for prostatectomy cases was significantly shorter overall compared to spine surgery cases (mean  $6.6 \pm 2.9$  hours versus  $9.8 \pm 3.1$  hours, respectively,  $p < 0.05$ ). No clinically or statistically significant differences were found between groups for estimated blood loss, lowest hematocrit and intraoperative blood pressure ranges. The percentage of cases with bilateral involvement was not significantly different between groups (67 percent versus 66 percent bilateral, respectively). Similarly, there was no significant difference in the proportion of cases diagnosed with anterior ION between groups (50 percent of prostatectomy cases versus 23 percent of spine surgery cases). Onset of symptoms did not significantly differ between groups (50 percent prostatectomy ION cases with symptom onset within 24 hours post-operatively compared to 69 percent spine surgery ION cases).

# and Robotic Prostatectomies

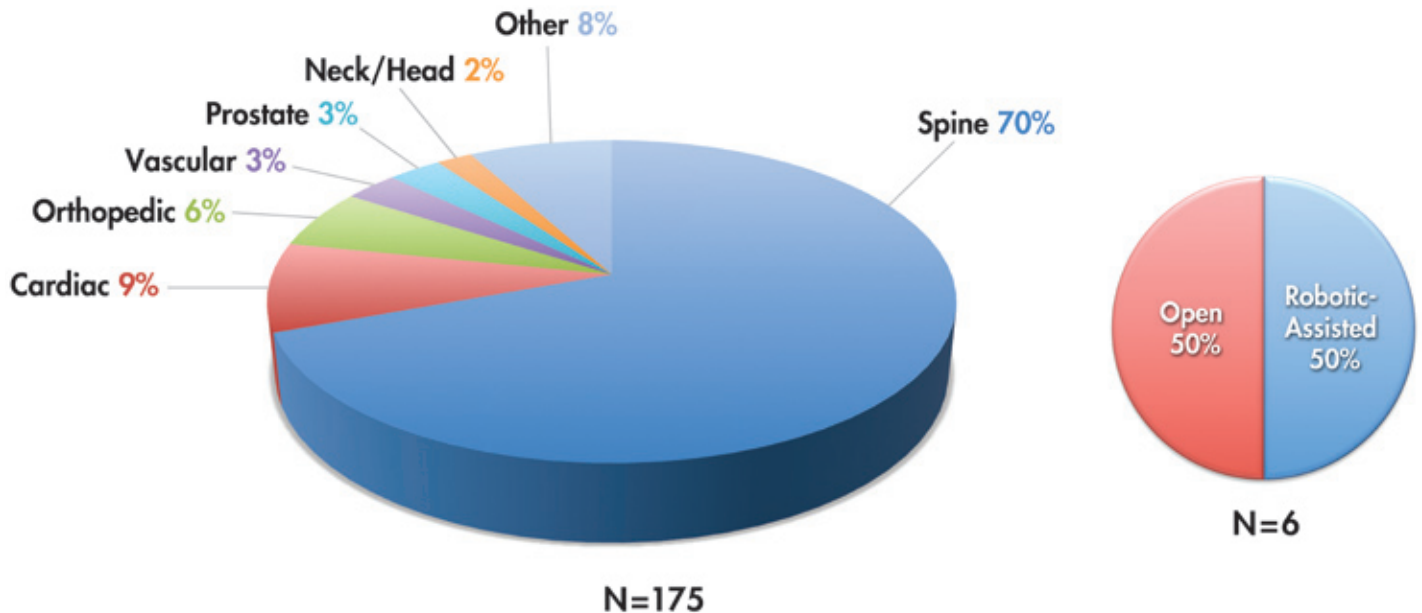


Figure: Postoperative Visual Loss (POVL) Surgical Procedures

Although small in number, comparison of the open radical prostatectomy and RALP cases reveal interesting differences. Three open prostatectomy cases occurred between 1997 and 2003, and three RALP cases occurred between 2006-10. Open cases had an anesthetic duration of 3.2 to 4.4 hours with onset of symptoms on postoperative day two or later. RALP cases occurred between 2006 and 2010 with an anesthetic duration of 7.9 to 9.9 hours with onset of symptoms in the first 24 hours postoperatively. All of the open radical prostatectomy cases were diagnosed with anterior ION, whereas two of the three RALP cases were diagnosed with posterior ION (one case with unknown ION type). The small number of cases and the fact that these cases are voluntarily submitted do not allow a direct assessment of the risks for ION between these two prostatectomy procedures.

However, it is interesting to note that despite the recent introduction of RALP, several cases of ION have already been identified. The longer anesthetic duration of the RALP cases

in this database, and the greater head-down tilt observed in RALP procedures overall, may increase the severity of venous congestion in the head compared to open radical prostatectomies. If the theory regarding prolonged venous congestion of the head contributing to the development of ION perioperatively is correct, we should anticipate an increase in reports of this complication as RALP is adopted by more surgeons.

The ASA POVL Registry continues to collect cases of POVL occurring after any non-ocular surgery and has a heightened interest in acquiring POVL cases associated with prostatectomies. Please visit the ASA Closed Claims website at [www.asaclosedclaims.org](http://www.asaclosedclaims.org) to access the ASA POVL Registry case submission forms or to contact us directly.

**References:** Available at the back of the *NEWSLETTER* e-version online at [www.asahq.org](http://www.asahq.org) or by request by sending an e-mail to [communications@asahq.org](mailto:communications@asahq.org).