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Epinephrine Diluted Saline-Irrigation Fluid in Arthroscopic Shoulder Surgery: A Significant Improvement of Clarity of Visual Field and Shortening of Total Operation Time

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Summary:
adding epinephrine to irrigation fluid will significantly improve visual clarity in all types of therapeutic shoulder arthroscopies performed.

Abstract:
Purpose:
Our goal was to determine the influence of epinephrine saline-irrigation in therapeutic shoulder arthroscopy procedures on the clarity of the view. We not only looked at all therapeutic arthroscopic procedures combined, but specified these different procedures into three subgroups; (1) Bankart/ SLAP-repairs; (2) rotator cuff repairs; and (3) subacromial procedures (e.g. impingement and or AC-joint pathology). Secondary objectives were to evaluate the influence on total operating time and potential cardiovascular adverse reactions.

Methods:
The study was designed as a prospective, randomized, double-blinded controlled study. We included 100 patients in need of a therapeutic shoulder arthroscopy. They were divided into 3 subgroups: Bankart or SLAP-repair (n=28), rotator cuff repair (n=40), or subacromial procedures (n=32). All patients were randomized into an epinephrine and control group.
In the epinephrine group, epinephrine (0,33 mg/ 3 liter) was added to the pump controlled, saline-irrigation fluid. Normal saline, pump controlled, irrigation fluid was used in the control group.
During the arthroscopy the surgeon rated the visual clarity every 5 minutes by a Visual Analogy Scale. Total operation time, total use of irrigation fluid, increased pump pressure, heart rate, blood pressure and electrocautlery use were registered.

Results:
In general, the clarity of the visual field ($p < 0.01$) and total operating time ($p|<0.01$) were significantly better in procedures using diluted epinephrine saline-irrigation fluid compared to procedures without epinephrine. Also, total usage of irrigation fluid was significantly lower in the epinephrine group ($p< 0.01$). In addition, the use of epinephrine showed significantly better results for each of the three specific subgroups. The greatest difference in visual clarity and shortening of operation time up to 15 minutes was seen in the Bankart and SLAP repairs. During the procedures, no differences were seen in cardiovascular parameters.

Conclusion:
When implementing in clinical practice, adding epinephrine to irrigation fluid used will significantly improve visual clarity in all types of therapeutic shoulder arthroscopies performed.
While good visibility is one of the most important factors in performing a good, fast and safe arthroscopic procedure it will improve performance and even shorten intraoperative time significantly without giving any cardiovascular adverse events.