



High Intercapsular Pressure in Phacoemulsification Surgery (HICP)

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Abstract:

Aim: In cases of high intercapsular pressure during cataract surgery, the goal is to prevent capsulorhexis extension and modify the surgical approach accordingly. This study evaluated the use of small capsulorhexis with minimal irrigation in phacoemulsification surgery.

Methods: This case series included 1000 patients who underwent small capsulorhexis phacoemulsification surgery between May 2010 and June 2015. Minimal irrigation was used to reduce intercapsular pressure and improve surgical safety.

Results: Of the 1000 patients, 640 were male and 360 were female, with a mean age of 65 years (range: 50–70 years). The best outcomes were observed in patients with Morgagnian and hypermature cataracts.

Conclusion: Small capsulorhexis with minimal irrigation is a safe and effective technique for managing high intercapsular pressure. This approach minimizes the risk of capsulorhexis extension and facilitates safe phacoemulsification.

Keywords: Intercapsular pressure, small capsulorhexis, minimal irrigation, phacoemulsification, cataract surgery.

Introduction

High intercapsular pressure presents significant challenges during cataract surgery. A small capsulorhexis combined with minimal irrigation provides a controlled method to reduce capsular tension and prevent extension of the capsulorhexis. This technique allows for safer manipulation of the nucleus and improved surgical outcomes.

The principles of this approach include:

1. Filling the anterior chamber with methylcellulose to maintain chamber stability.
2. Creating a small capsulorhexis through the main incision.

3. Using minimal irrigation via hydrodissection cannula, with gentle pressure applied to the posterior lip of the incision to prevent iris prolapse.
4. Enlarging the capsulorhexis after stabilization, repeating hydrodissection or pneumodissection as needed.
5. Rotating the nucleus with a Sinsky hook before proceeding with phacoemulsification.

Materials and Methods

A prospective case series was conducted between May 2010 and June 2015. A total of 1000 patients with advanced cataracts underwent phacoemulsification using the described technique. Data were collected on patient demographics, cataract type, intraoperative complications, and outcomes.

Results

- Total patients: 1000
- Gender distribution: 640male, 360 female
- Mean age: 65 years (range: 50–70 years)
- Cataract types: 600 Morgagnian, 400 hypermature

The technique demonstrated the best results in Morgagnian and hypermature cataracts, with reduced risk of capsulorhexis extension and improved intraoperative control.

Discussion

High intercapsular pressure increases the risk of uncontrolled capsulorhexis extension. This study confirms that a small capsulorhexis combined with minimal irrigation is an effective and safe modification to standard phacoemulsification techniques. The method reduces intracapsular pressure, provides better surgical control, and prevents complications related to capsular extension.

These findings are consistent with prior literature emphasizing controlled capsulorhexis techniques in challenging cataract cases. The method is especially advantageous in advanced cataracts such as Morgagnian and hypermature types.

Conclusion

Small capsulorhexis with minimal irrigation is a simple, safe, and effective modification in cataract surgery. It minimizes intercapsular pressure, reduces surgical complications, and facilitates successful phacoemulsification, particularly in advanced cataracts.

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