



Complications by Ophthalmic Residents while doing Phacoemulsification Surgery: A Comparative Approach

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Purpose: The purpose of our study is to compare the rates of complications by ophthalmic residents while doing phacoemulsification surgery with supervision or without supervision of attending.

Place of Study: Lahore General Hospital, Lahore.

Duration of Study: one year (February 2022 to February 2023).

Institution review board approval was obtained before the study was initiated. All cataract surgeries

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were done by third year and fourth year residents, total of 50 in number were recorded. Results were analyzed and compared for the residents performing phacoemulsification surgery with supervision and without supervision.

Results: A Performa was circulated among 50 residents of ophthalmology and results were deduced. 45 residents out of 50 residents (90%) performed phaco surgery without any complication under supervision. 1 resident out of 50 residents (2%) had poor wound construction while doing surgery under supervision. 2 residents out of 50 residents (4%) had Continuous Curvilinear Capsulorhexis run off while doing surgery under supervision. 1 resident out of 50 residents (2%) had a posterior capsular rent without nucleus drop while working under supervision. 1 resident out of 50 residents (2%) had a posterior capsular rent with nucleus drop while working under supervision.

Without supervision 30 residents out of 50 (60%) performed surgery without any complications. 5 residents out of 50 (10%) had poor wound construction. 5 residents out of 50 (10%) had Posterior capsular rent with nucleus drop. 7 residents out of 50 (14%) had posterior capsular rent only. 3 residents out of 50 (6%) had CCC run off.

Conclusion: When residents perform surgery under supervision there is less chance of complications as compared to when the residents perform surgery without supervision so residents must perform surgery under supervision of seniors to avoid complications.

Keywords: Phacoemulsification; ophthalmic residents; complications of phacoemulsification.

1. INTRODUCTION

Phacoemulsification is currently the standard procedure of choice for cataract surgery worldwide.

It is the most accepted procedure for cataract surgery and has widely replaced old methods for cataract extraction e.g., extracapsular cataract extraction and intracapsular cataract extraction.

Whenever a surgical procedure is done, it is never free of complications. No surgical procedure is ever 100% safe. Similarly, phacoemulsification is also a procedure that carries with it significant risks of per operative complications. These complications could vary from minor complications like poor wound making or running of capsulorhexis to major complications like the posterior capsular rent or suprachoroidal hemorrhage.

Although complications are inevitable in any procedure but they can either be avoided or be dealt with accordingly. The complications of phacoemulsification can occur at any stage during the procedure and can be done by novice to experienced surgeons. To avoid complications, it is necessary to have a supervisor by your side who can guide you and help you to avoid complication and manage complications if they occur [1].

The complicated links between trainee experience and problems have been the subject

of numerous research, but little is known about how attending experience may affect resident surgical success. Operating room attendings keep an eye on resident performance and work to avert inappropriate and perhaps harmful surgical occurrences. In urgent situations, attendings may potentially take over the procedure. As a result, for resolving potential emergencies in the operating room, attending experience and competence should be crucial. Yet, there aren't many research that genuinely address this experience issue [2].

The purpose of our study is to compare the rates of complications by ophthalmic residents while doing phacoemulsification surgery with supervision or without supervision of attending.

2. MATERIALS AND METHODS

2.1 Place of Study

Lahore General Hospital, Lahore.

2.2 Duration of Study

One year (February 2022 to February 2023).

All cataract surgeries were done by third year and fourth year residents, total of 50 in number were recorded. Results were analyzed and compared for the residents performing phacoemulsification surgery with supervision and without supervision.

2.3 Sample Size

A Sample size of 50 residents of ophthalmology patients is estimated at 95% confidence level and taking expected prevalence rate as 77.5% (Singh et al., 2017) with 7% margin of error.

$$n = \frac{Z^2_{1-\alpha/2} \cdot p \cdot q}{d^2}$$

$Z^2_{1-\alpha/2}$ confidencelevel95% = 1.96
 p = Expected sensitivity = 77.5 %
Absolute precision = d = 7%

3. RESULTS

A Performa was circulated among 50 residents of ophthalmology and results were deduced.

45 residents out of 50 residents (90%) performed phaco surgery without any complication under supervision.

1 resident out of 50 residents (2%) had poor wound construction while doing surgery under supervision.

2 residents out of 50 residents (4%) had Continuous Curvilinear Capsulorhexis run off while doing surgery under supervision.

1 resident out of 50 residents (2%) had a posterior capsular rent without nucleus drop while working under supervision.

1 resident out of 50 residents (2%) had a posterior capsular rent with nucleus drop while working under supervision.

Without supervision 30 residents out of 50 (60%) performed surgery without any complications.

5 residents out of 50 (10%) had poor wound construction.

5 residents out of 50 (10%) had Posterior capsular rent with nucleus drop.

7 residents out of 50 (14%) had posterior capsular rent only.

3 residents out of 50 (6%) had CCC run off.

4. DISCUSSION

At IOVS, senior anterior segment attending physicians oversee all resident cataract patients. The likelihood of complications may have been lower than would have been the case without the attending physician's skilled advice. Studies have indicated that new surgeons may need to do

several hundred phacoemulsification procedures before their complication rate becomes acceptable low, even though residents at IOVS perform a sizable number of surgical cases during training [2,3,4].

In their initial phacoemulsification cases, national and international surgeons reported nucleus drop rates ranging from 0.25% to 0.79% [2,3,7,10]. In one study, the initial 70 phacoemulsification procedures carried out by the first two residents learning the procedure—both of whom had prior expertise with standard manual ECCE—were analysed for incidence of problems and visual outcomes. In the vitreous, no nuclei were lost.

The issue, which manifested in 0.67% of our instances, was nucleus drop. This complication caused issues for the patients. For effective therapy, we sent these instances to vitreoretinal surgeons.

In 1.33% of posterior capsular rupture instances, the nucleus was effectively removed, but cortical and tiny nucleus pieces that had fallen into the vitreous were treated cautiously [5,6,7,8].

Ophthalmology residency programmes are entrusted with producing the following generation of accomplished cataract surgeons as the need for cataract surgery keeps increasing. But teaching surgery is intrinsically challenging because it must allow new residents to develop their abilities and self-assurance in the operating room without jeopardising patient outcomes. Microsurgery presents a unique set of difficulties [9,10,11,12].

5. CONCLUSION

When residents perform surgery under supervision there is less chance of complications as compared to when the residents perform surgery without supervision so residents must perform surgery under supervision of seniors to avoid complications.

CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Institution review board approval was obtained before the study was initiated.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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