



Effect of Chatter Lines and Opaque Bubble Layer on Enhancement Rate for Optimized Femto-LASIK

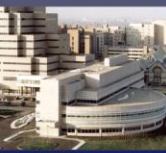
John Au, MD (no financial disclosures)

Ronald Krueger, MD, MSE (Alcon consultant)

Cole Eye Institute, Cleveland, OH



Purpose



To determine the relationship between chatter lines and opaque bubble layer and enhancement rate for Fs-200 LASIK flaps



Methods



We reviewed medical records of patients who underwent LASIK on the Fs-200/Allegretto Wavelight platform at the Cole Eye Institute, Cleveland, OH from March 2011 through August 2012



Methods



- We analyzed all eyes corrected for distance and monovision
- Patients were divided into four groups based on spherical equivalent:
 - High myopia ($>-6D$)
 - Moderate myopia ($>-3D$ to $-6D$)
 - Mild myopia ($0D$ to $-3D$)
 - Hyperopia



Results

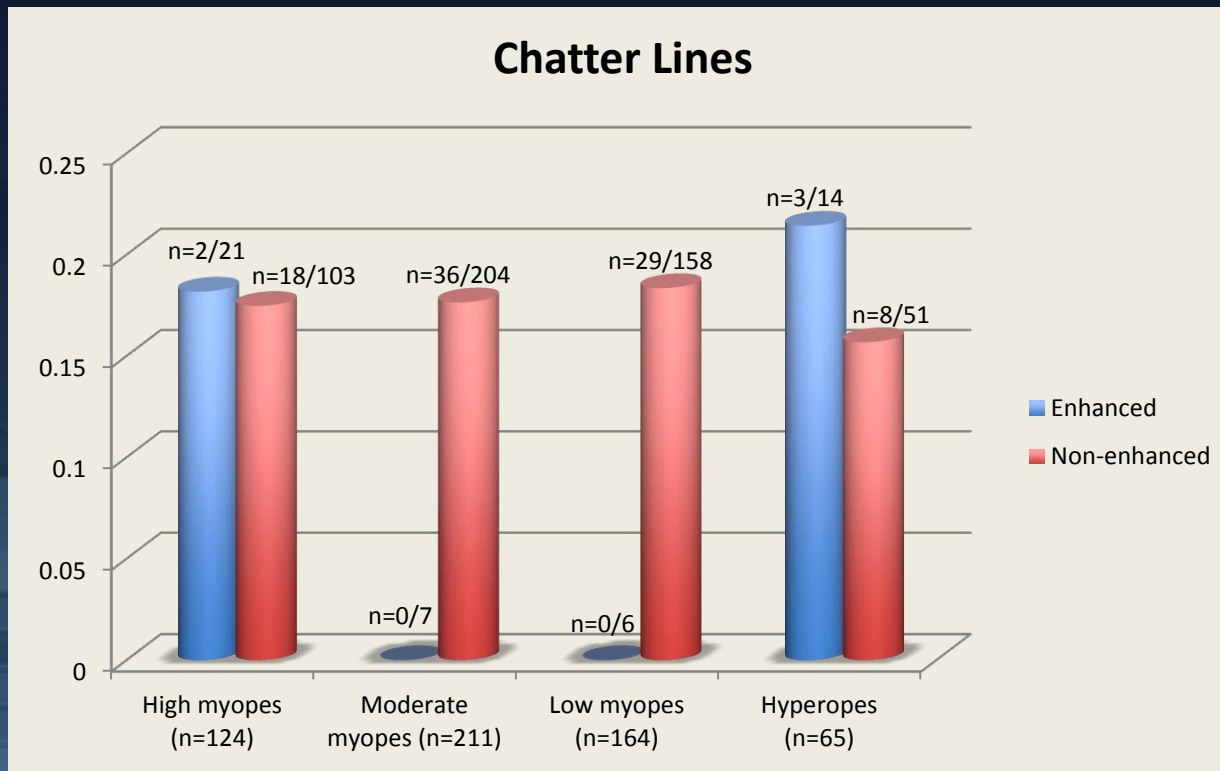


- 673 total reviewed eyes
- 109 excluded for follow up less than 3 months

| | Enhanced | Enhanced Monovision | Non-enhanced | Non-enhanced Monovision | Total Included | Excluded |
|-----------------|----------|------------------------|--------------|----------------------------|-------------------|----------|
| High myopes | 21 (17%) | 3/21 (14%) | 103 (83%) | 16/103 (16%) | 124 | 25 |
| Moderate myopes | 7 (3%) | 4/7 (57%) | 204 (97%) | 27/204 (13%) | 211 | 52 |
| Mild myopes | 6 (4%) | 1/6 (17%) | 158 (96%) | 16/158 (10%) | 164 | 28 |
| Hyperopes | 14 (22%) | 1/9 (11%) | 51 (78%) | 22/51 (43%) | 65 | 4 |
| All groups | 48 (9%) | 9/43 (21%) | 516 (91%) | 81/516 (16%) | 564 | 109 |



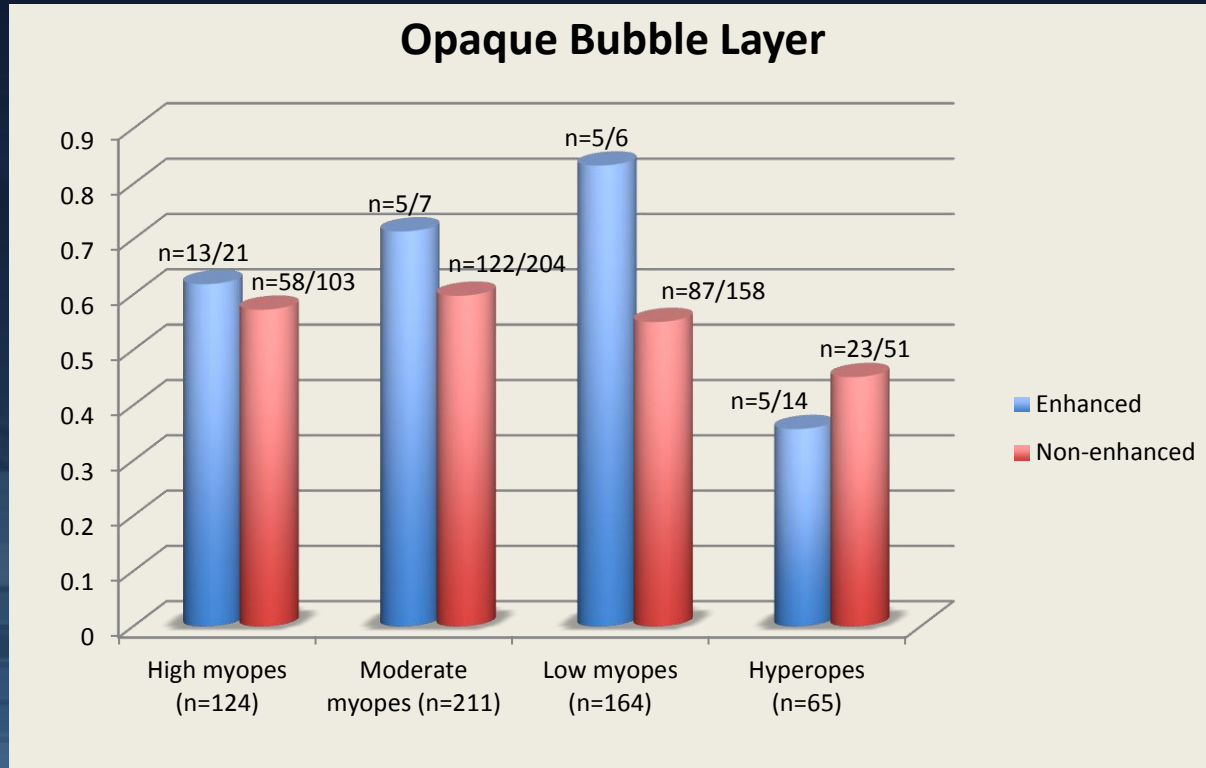
Results



Chatter lines – We found no significant difference between enhanced and non-enhanced eyes regarding incidence of chatter ($p=0.52$ for high myopes, $p=0.61$ for moderate myopes, $p=0.59$ for low myopes, $p=0.69$ for hyperopes). n =number of eyes with chatter lines/total number of eyes in group (e.g. low myopes enhanced)



Results

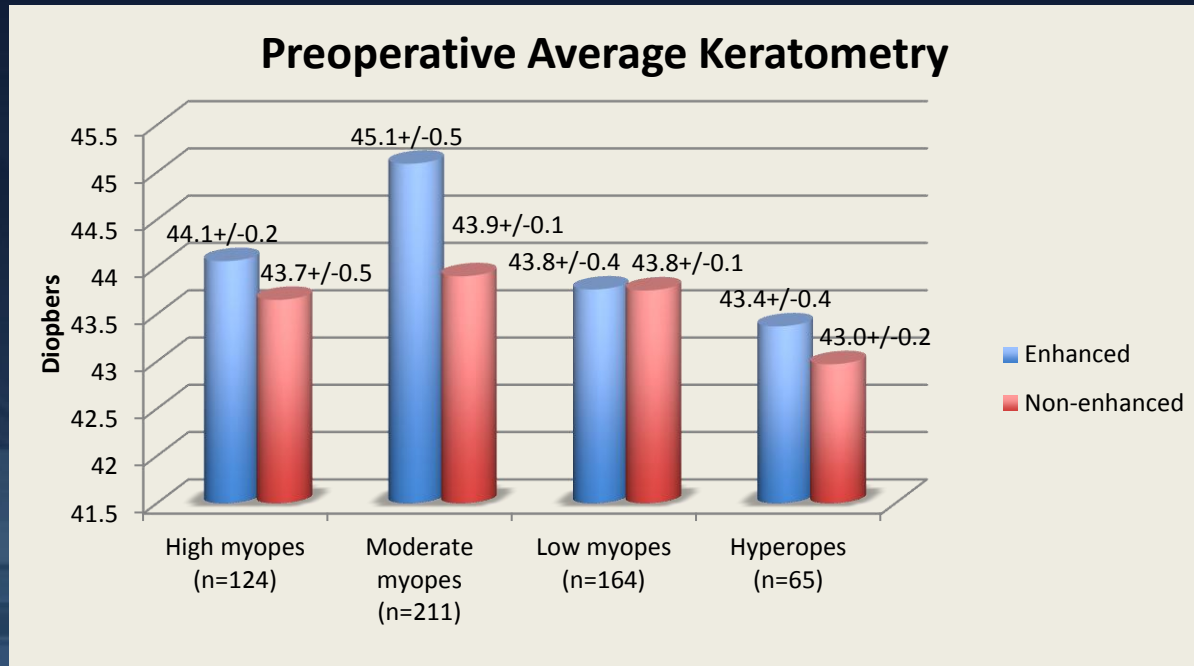


OBL – We found no significant difference between enhanced and non-enhanced eyes regarding incidence of OBL ($p=0.81$ for high myopes, $p=0.71$ for moderate myopes, $p=0.23$ for low myopes, $p=0.76$ for hyperopes).

n=number of eyes with OBL/total number of eyes in group (e.g. low myopes enhanced)

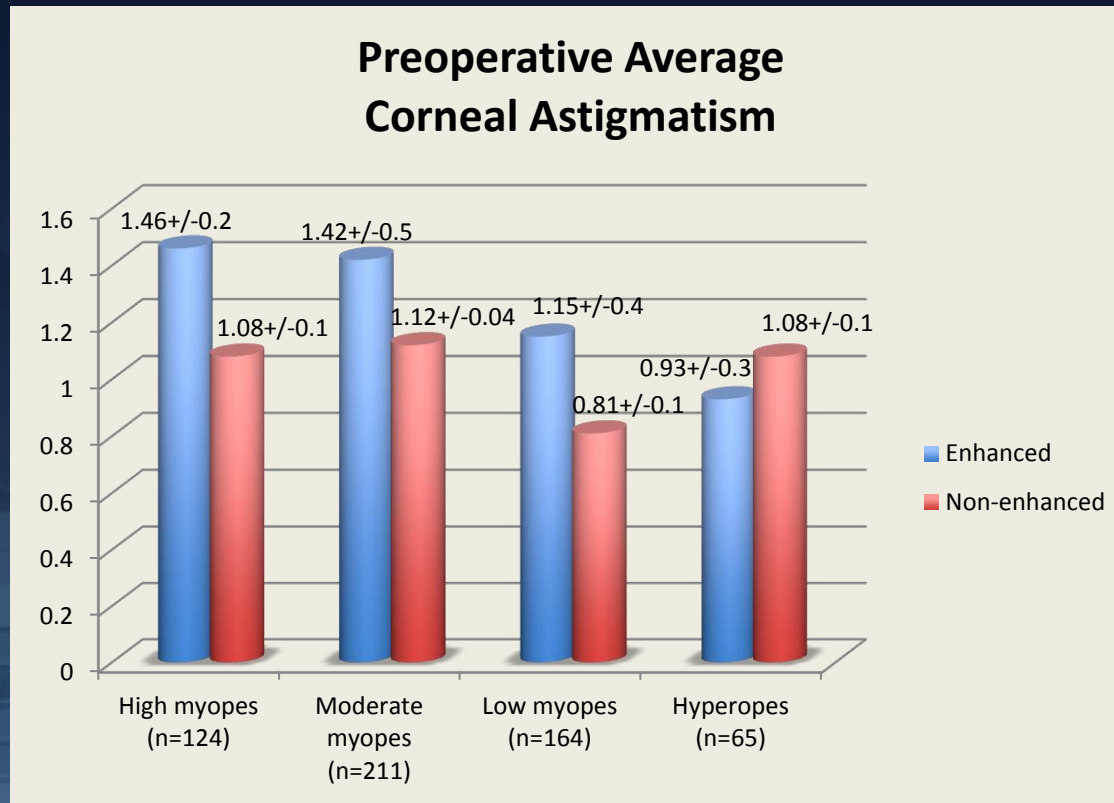


Results



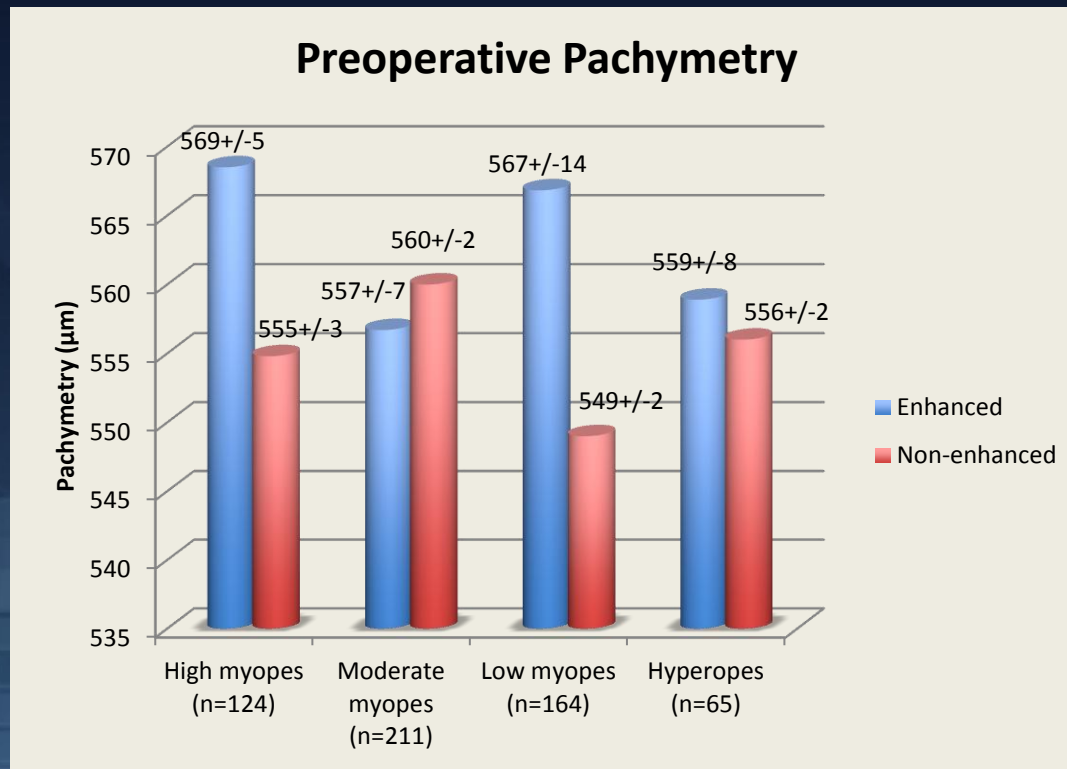
Preoperative keratometry – We found no significant difference between enhanced and non-enhanced eyes regarding preoperative keratometry ($p=0.70$ for high myopes, $p=0.21$ for moderate myopes, $p=0.84$ for low myopes, $p=0.38$ for hyperopes).

Results



Preoperative corneal astigmatism – A trend toward higher amount of preoperative corneal astigmatism in the enhancement group was noted for all myopic groups. However, we found no statistically significant difference between enhanced and non-enhanced eyes regarding preoperative keratometry for any refractive group ($p=0.15$ for high myopes, $p=0.25$ for moderate myopes, $p=0.82$ for low myopes, $p=-0.59$ for hyperopes).

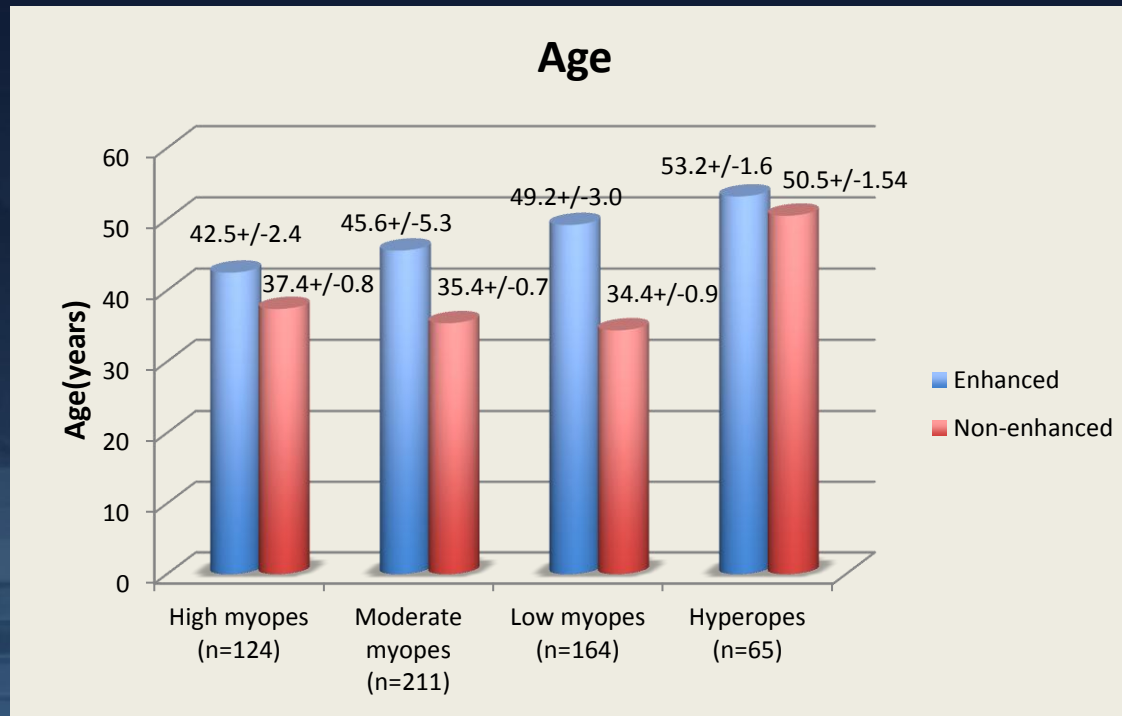
Results



Preoperative pachymetry – Enhanced highly myopic patients had statistically significantly thicker corneas compared to non-enhanced ($p=0.04$). Enhanced low myopes showed a tendency toward thicker corneas, but not to a statistically significant level ($p=0.14$). Neither of the other groups showed a significant difference in preoperative pachymetry ($p=0.76$ for moderate myopes, $p=0.76$ for hyperopes).



Results



Age –Among all myopic groups, those who received enhancements were significantly older than those who did not ($p=0.02$ for high myopes, $p=0.01$ for moderate myopes, $p=0.001$ for low myopes). No difference was found for hyperopes ($p=0.38$). Only the moderate myopic group showed a significantly higher proportion of monovision treatments among the enhanced group compared to the non-enhancement group ($p=0.01$)



Conclusions



1. Chatter lines and OBL generated by the Fs-200 do not appear to increase the enhancement rate
2. Keratometry and corneal astigmatism do not correlate with enhancement rate
3. Older age may correlate with increased rate of enhancement
4. Thicker corneas may increase the need for enhancement in high myopic treatments
5. High myopic/hyperopic treated patients require more enhancements