

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Femto Second Laser-assisted Cataract Surgery  
(FLACS): where are we now ?



Osama Al Nahrawy, MD.

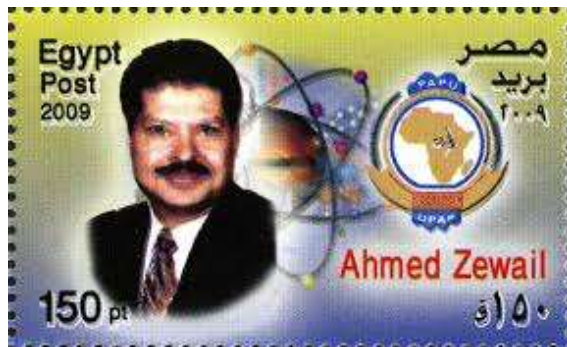
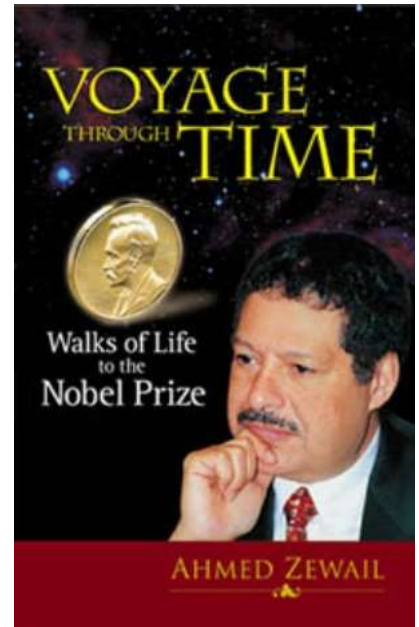
Suez Canal University, Head of Egyptian Femto Society  
11<sup>th</sup> International RIO meeting, 2-3 February, 2017, Cairo  
[www.rio-conference.com](http://www.rio-conference.com)

## Disclosure

- 1. I have no financial interest.
- 2. I have been (AND MY COLLEAGUES) harmed, damaged by purchasing and adopting FLACS.

د. احمد زويل رحمه الله  
Zwail Passed away  
(femtosecond unit of  
time discoverer)

٢ أغسطس، ٢٠١٦، باسادينا،  
كاليفورنيا، الولايات المتحدة



## FLACS Available technology



LENSAR  
Topcon



VICTUS  
Bausch & Lomb



LenSx  
Alcon

The first truly mobile refractive  
cataract femtosecond laser

Now CE approved



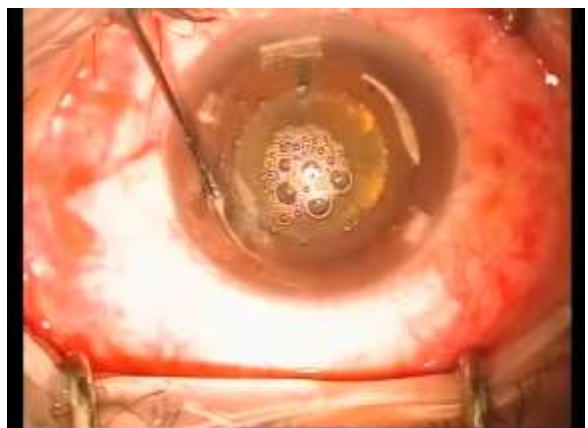
## Where are we now ?

- Technical advances. Special indications (single-eyed, subluxation, ...)
- Where is it in the international databases and registers (Eurequo, Swedish, Malysian cataract surgery registers).
- The Situation in Egypt and Middle East (DECLINING ADOPTION) ??

**We (I and My colleagues) have introduced this technology into Egypt at 2012 with the aims of obtaining the best surgical outcomes in cataract surgery.**

**We expected that this could be accomplished through automation, computation, standardization and reduction of human errors.**

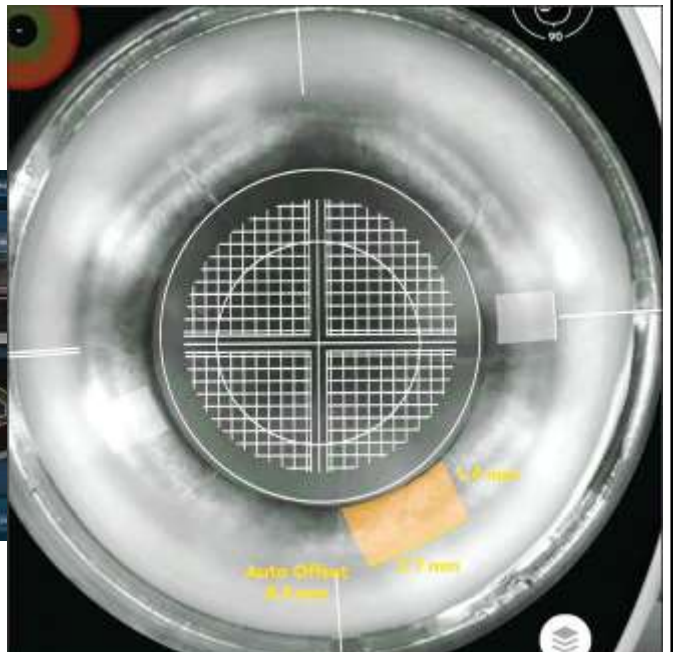
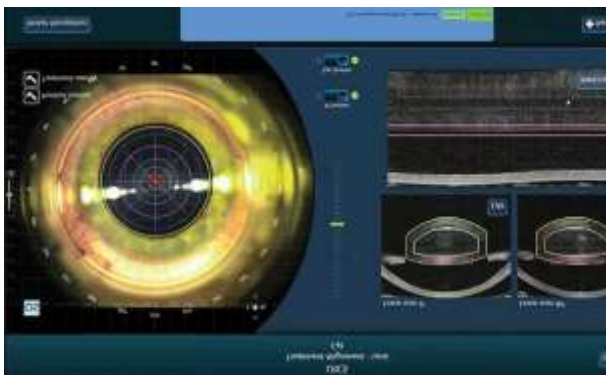
**Those are two videos, where we see computed standardized corneal and arcuate incisions, capsulotomies and lens fragmentation.**



## Technical Advances: (cubicle nucleotomy patterns) and ZERO PHAKO FLACS

- Eurotimes Dec 2016, Zolt Biro, reported: Effective phako time (EFT) can be reduced to zero with FLACS.
- EFT:= the multiple of total phakotime and average % power used, which represents a metric for the length of phako time if it has been used at 100% power in continuous mode.
- Routine use of zero phako will further reduce the damage to the endothelial cells and the macula.
- Research has shown that the simpler nucleotomy patterns like cross pattern or the so called pizza pattern, reduces the amount of phako energy up to 50%. That in turn reduces endothelial cell loss by up to 40%.
- He noted that his own recent experience in a series of 20 patients shows that the use of cubicle grid nucleotomy pattern can eliminate the need for ultrasound phakoemulsification completely.
- Zero phako FLACS should result in clearer corneas on the first day. This pattern fragments the nucleus into tiny 250-2000 um cubes. After nucleofractis, the small pieces can be successfully removed.

**Treatment planning screens,  
Pizza pattern and cubicle  
pattern femto-  
fragmentation: small cubes  
from 200-2000 U.**

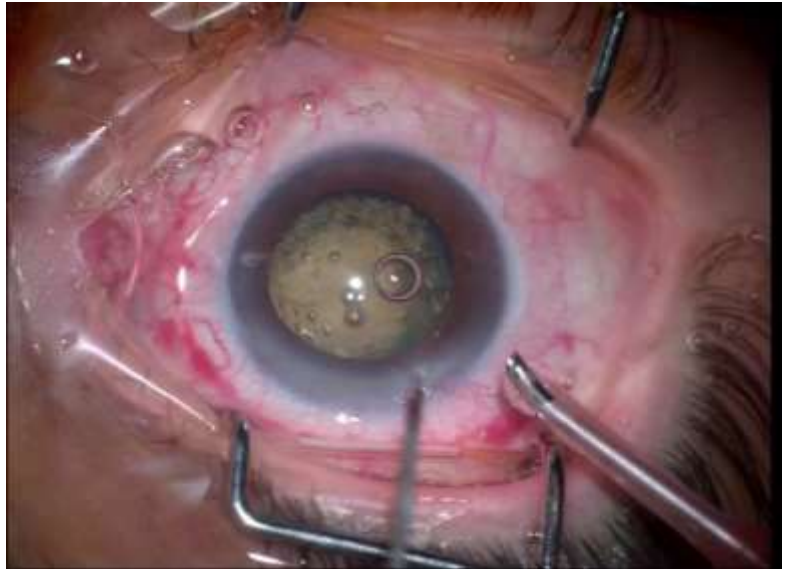


\* 75 Years old, Single eyed patient (the other eye had previous complicated cataract surgery with secondary absolute glaucoma and corneal decompensation)

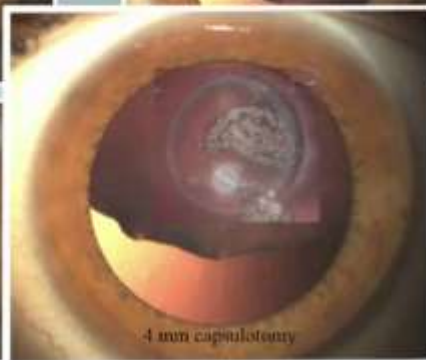
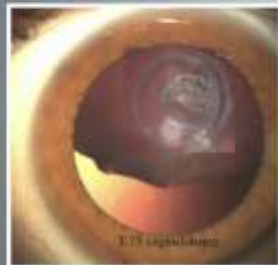
\* He was looking for the safest methods to extract his cataract (grade 3+) and to minimize the human errors or factor as much as possible.

\* I choosed ZERO FLACS for him. 400 U cubicles were removed easily. Second day, clear cornea.

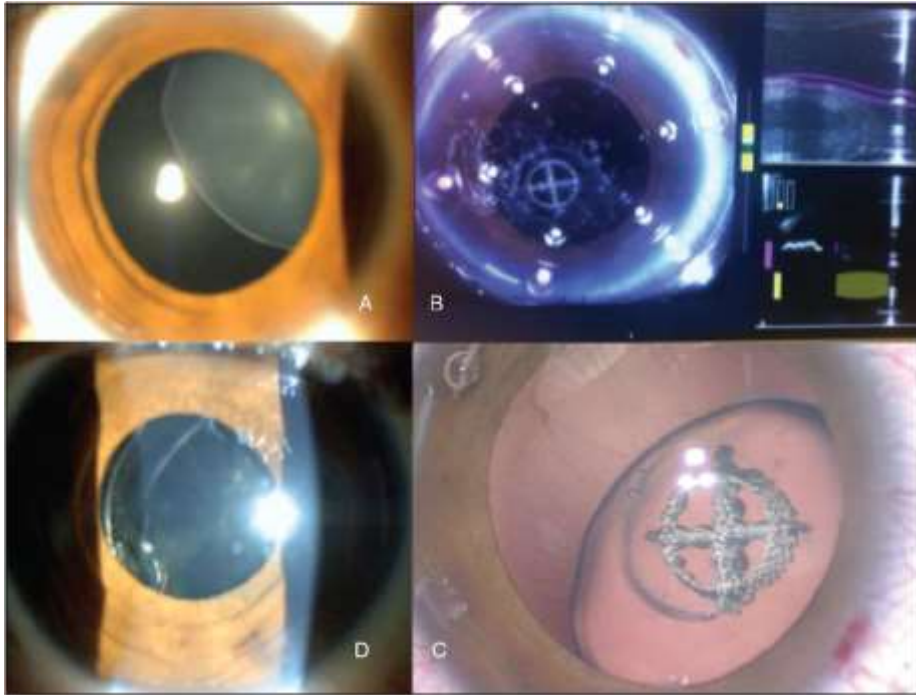
## Single-eyed patient Zero Phako FLACS



## OTHER INDICATIONS OF FLACS



**Other indications of FLACS: subluxated lenses in Marfan S or traumatic subluxation**



<https://theophthalmologist.com/issues/0316/the-us-view-on-eurequo/>

- EUREQUO is a database, maintained by the ESCRS, that contains information on ~1.5 million cataract surgeries
- It was recently mined for a precisely-matched case-control study of FLACS vs. manual capsulorhexis and standard phacoemulsification – and neither method came out on top
- But what do US surgeons think? In spite of considerable uptake of FLACS stateside, surgeons' views on the technique are conflicted
- We asked David Chang and Mitchell Jackson to share their thoughts on the EUREQUO results, and the “man vs. laser” debate.

<https://theophthalmologist.com/issues/0316/the-us-view-on-eurequo/>

- But EUREQUO is very much a European registry – do the findings translate to other countries that have seen substantial uptake of the femtosecond laser, like the US? We asked two expert cataract surgeons from across the pond, David Chang and Mitchell Jackson, to share their thoughts.



## U.S.View on the Eurequo (Mitchell Jackson):

- “This study is registry-based and lacks prospective randomization, and in my opinion, is not a valid enough study to make a claim that FLACS is inferior or riskier than manual phaco alone.”

## My View on Eureka

- Biased study : samples are different: patients are early-cataract are soft- doctors are well trained . Matched comparisons should be done. Eg soft cataracts manual vs flacs. Hard cataract manual vs flacs. Resident manual cataract vs resident flacs.
- Technology in its infancy is being compared with a mature technology 30 years old (since Keman 1986)
- The infant technology is as good as the mature one. Or it does not outperform the mature one !!!!!!!!!!!!!!!!, so the infant one is excellent.
- Biased since the first 50 cases of each surgeon have been introduced in the study, so learning curves are not avoided.

## European Quality Outcomes Cataract Surgery Register and database (Eureka)

- The ESCRS EUREQUO FLACS study questioned whether FEMTO outperforms conventional phakoemulsification. Answer is: NO.
- The study included data from 2814 FLACS cases entered prospectively in the database, and 4987 controls entered in 2014. these were identified retrospectively and matched for the precisely the same preoperative BCVA, age within two years, and scoring the same yes or no for the EUREQUO field on ocular comorbidity and anticipated surgical difficulty. All FLACS cases were performed by surgeons who had exceeded a 50-case learning curve and all reported cases were consecutive.
- PETER BARY in XXXIII ESCRS CONGRESS IN BARCELONA SPAIN , reported about what did this study measure and what it did not measure.
- The study did measure the anticipated surgical difficulty, ocular comorbidity, peri-operative complications, monofocal vs premium IOLs, post-operative complications, best corrected visual acuity (BCVA) biometry prediction error, and post-operative cylinder and surgically induced astigmatism.
- The study did not measure circularity or centration of the capsulorhexis, absolute phakoemulsification energy, the laser platform used, endothelial cell loss, effective lens positioning, or higher order aberrations. There were no comparisons in the database.
- This ESCRS case control study finds better astigmatism control if compared to phako as the only benefit.



## The Swedish Cataract Surgery Register and Database

- No mention or inclusion of FLACS in the version I could download.

## The Malaysian Cataract Surgery Register and Database

- No mention or inclusion of FLACS in the version I could download.

## The situation in Egypt and Middle East

- FLACS clubs stopped arranging new symposia,
- Femtolaser society board reluctant in deciding the new 2017 congress.
- Adoption of new machines stopped or declined
- Appetite of surgeons to do FLACS is declining
- Some centers returning back their machines.
- FLACS machines in most centers and hospitals are not being used.
- Some centers had been exposed to non-honest marketing attitude and were provided with specifications that were not available in the purchased machines.

## Take home message

FLACS is in its infancy.

Research and development has to continue to improve its performance.

Please think many times before you buy a FLACS machine !!!!!!!!!!!

Thank you or your attention