

LASIK SURGERY IN AL- NASSIRYA CITY A CLINICOSTATISTICAL STUDY

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SUMMARY:

Background: LASIK which stands for laser in-situ keratomileusis is the procedure that involves creating corneal flap to ablate mid stromal tissue directly with an excimer laser beam, ultimately flattening the cornea to treat myopia and steepening the cornea to treat hypermetropia, whereas earlier techniques of keratomileusis consisted of removing a corneal flap and resecting stromal tissue manually, technologic advancements have revolutionized this procedure into highly automated process. In general the goals of the refractive surgery are to reduce or eliminate the need for glasses or refractive lenses without altering the quality of the vision or best corrected vision. Most improvement in refractive errors is measured in term of visual acuity (Snellen chart) .

Aim Of The Study: is to have a clinico-statistical assessment of LASIK surgery in AL-Nasirya city, since it is a recent surgery in Iraq started for the first time three years ago in Almosawi Hospital.

Patients And Methods:

In this study a 510 cases of ametropic patients (myopia, hypermetropia, and astigmatism) with visual acuity of 6/24 or worse underwent LASIK surgery for correction of refractive error in Al-Mosawi private hospital from a period between August 2007 – August 2010. Each patient examined preoperatively for visual acuity, type of refractive error, corneal thickness (pachymetry), and corneal surface shape (topography) to decide the suitable candidates for surgery. Postoperatively the patient examined for visual acuity.

Results:

In this study we noticed that from 510 cases, 300 (58.82%) were female, while the remaining 210 cases (41.176) were male. Regarding the age distribution of the cases, 152 (29.8%) of the cases lies between 23-27 year , which is the predominant age group. The second most predominant age group was between 28-32 year, 126 cases (24.7%) lies in this age group. One hundred two cases (20%) were between 18- 22 years. Seventy cases (13.7%) were between 33-37 years. Regarding the refractive error, most of the cases operated on had low myopic astigmatism the number of the cases was two hundred two (39.6%). The second most frequent refractive error was low myopia representing 156 cases (30.58%). high myopia was the third most common refractive error representing 86 cases (16.86%). Fourth group was high myopic astigmatim representing 10.58% (54 cases). The last group was hypermetropia representing 2.35% (twelve cases). Regarding the visual acuity 81.81% (832 eyes) had uncorrected visual acuity of 6/6 or better, 95.083% (967 eyes) had uncorrected visual acuity of 6/9 or better, and 100% (1017 eyes) had visual acuity of 6/12 or better.

Key Words: LASIK surgery, refractive surgery.

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INTRODUCTION:

LASIK which stands for laser in-situ keratomileusis is the procedure that involves creating corneal flap to ablate mid stromal tissue directly with an excimer laser beam, ultimately flattening the cornea to treat myopia and steepening the cornea to treat hypermetropia, whereas earlier techniques of keratomileusis consisted of removing a corneal flap and resecting stromal tissue manually, technologic advancements have revolutionized this procedure into highly automated process. Contemporary techniques use a suction ring with a blade guide, an automated microkeratome blade and an excimer laser. After a lid speculum is placed and topical anesthetic is applied, the suction ring is counteracted on the cornea to apply a constant suction pressure more than 65 mm Hg on the eye (as measured by an applanation tonometry device). The microkeratome blade is then placed on the guide of the suction ring and advanced to create a hinged flap with a depth approximately 25-30% of the corneal thickness. The blade stops approximately 0.5 mm short of complete flap resection. The suction on the ring is shut off, and the flap is then lifted and moved to the side on its hinge, exposing a bed of bare stroma. Next, the excimer laser is applied directly to the stromal tissue. Afterward, the corneal flap is replaced to its original position typically without sutures and allowed to heal. LASIK generally recommended for myopia as high as 12 diopters although it is FDA- approved for myopia up to 14 diopters, for hypermetropia up to 4 diopters, and for astigmatism up to 5 diopters.⁽¹⁻⁶⁾

History:

LASIK is the most advanced type of refractive surgery, comparing with other types of refractive surgery like radial keratotomy (RK) and photorefractive keratectomy (PRK), LASIK offers the advantage of minimal postoperative pain as well as earlier recovery of vision because the

epithelium is left intact, there is less chance of corneal scarring and haze. LASIK complications include flap complications like buttonholes, thin flaps, flap amputation, incomplete or irregular flaps, also include post operative wrinkling, distortion or dislocation of the flap, epithelial ingrowths under the flap, diffuse lamellar keratitis, infectious keratitis, peripheral corneal infiltrates and optic neuropathy. FDA reports that LASIK eye surgery complications occur in 1 to 5 percent of cases.⁽⁷⁾

The Goals Of Refractive Surgery:

In general the goals of the refractive surgery are to reduce or eliminate the need for glasses or refractive lenses without altering the quality of the vision or best corrected vision. Goals vary for each patient, certain patients desire refractive surgery because of professional or life style issues examples include athletes and police, fire and military personnel who may find glasses or contact lenses hindering or even dangerous. Other patients such as high myopes may find spectacle correction inadequate because of image minification or may be intolerant of contact lenses.

Patients considering refractive surgery should be at least 18-21 years of age with a stable refraction. Those with ocular conditions like severe dry eye or uveitis and those taking medications that impair wound healing are poor candidates,

Whereas keratoconus, anterior basement membrane dystrophy, thin cornea, herpes simplex or zoster keratitis remain a contraindications for refractive surgery.⁽¹⁻³⁾

The improvement of visual acuity results with the evolution of laser technology has been substantial. A clinical trial using a conventional laser for myopic astigmatic LASIK yielded postoperative uncorrected visual acuity (UCVA) 6/6 in 47% of eyes, while a more recent clinical trials of wave front – guided ablation for myopic astigmatism LASIK achieved UCVA of 6/6 in 79%- 98% of eyes.⁽⁸⁻¹⁰⁾

PATIENTS AND METHODS:

In this study a 510 cases of ametropic patients (myopia, hypermetropia, and astigmatism) with visual acuity of 6\24 or worse underwent LASIK surgery for correction of refractive error in Al-Mosawi private hospital from a period between August 2007 – August 2010. All patients had LASIK surgery for both eyes except three of them had their surgeries for one eye only, so the number of eyes operated on was 1017. Each patient examined preoperatively for visual acuity, type of refractive error, corneal thickness (pachymetry), and corneal surface shape (topography) to decide the suitable candidates for surgery. Postoperatively the patient examined for visual acuity, which is the most important parameter to assess the success rate of LASIK surgery. In addition a statistical analysis was considered in this study including age, sex, and type of refractive error.

RESULTS:

In this study we noticed that from 510 cases, 300 (58.82%) were female, while the remaining 210 cases (41.176) were male (figure 1).

Regarding the age distribution of the cases, 152 (29.8%) of the cases lies between 23-27 year, which is the predominant age group. The second most predominant age group was between 28-32 year, 126 cases (24.7%) lies in this age group. One hundred two cases (20%) were between 18- 22 years. Seventy cases (13.7%) were between 33-37 years. Forty cases (7.48) were between 38-42 year. The number of cases lies between 43- 47 year was eighteen (3.5%). The least number of the patients lies between 48-52year which was only two cases(0.39%) (Figure 2).

Regarding the refractive error, most of the cases operated on had low myopic astigmatism figure (3), the number of the cases was two hundred two (39.6%). The second most frequent refractive error was low myopia representing 156 cases

(30.58%). high myopia was the third most common refractive error representing 86 cases (16.86%). Fourth group was high myopic astigmatim representing 10.58% (54 cases). The last group was hypermetropia representing 2.35% (twelve cases).

Regarding the visual acuity 81.81% (832 eyes) had uncorrected visual acuity of 6\6 or better, 95.083% (967 eyes) had uncorrected visual acuity of 6\9 or better, and 100% (1017 eyes) had visual acuity of 6\12 or better (figure 4).

Regarding the visual acuity of hypermetropic eyes following LASIK surgery; all patients 100% (24 eyes) had uncorrected visual acuity of 6\6 or better, Figure (5).

Regarding the visual acuity of low myopic eyes following LASIK surgery; 684 eyes (95.53%) had uncorrected visual acuity of 6\6 or better, 716 eyes (100%) had uncorrected visual acuity of 6\9 or better, figure (6).

Regarding the visual acuity of high myopic eyes following LASIK surgery; 124 eyes (44.765%) had uncorrected visual acuity of 6\6 or better, 227 eyes (81.95%) had uncorrected visual acuity of 6\9 or better, and 100% (277 eyes) had visual acuity of 6\12 or better, figure (7).

DISCUSSION:

LASIK studies vary considerably in the techniques employed, the degree of refractive error treated, the post operative follow-up, and the variables analyzed, consequently it is difficult to compare outcomes of different studies, while some trials separate results for low, moderate, and high myopes, other studies merge the post operative visual acuity results for all refractive error.

In this study we noticed that most of the cases (58.82%) were female figure (1), due to two facts, the first one is that myopia is more common in female than male⁽¹¹⁾, and since most of the cases in this study (97.65%) were myopia (figure 3), so we see

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that LASIK surgery is more common in female. The second fact is that female more than male in seeking for cosmetic procedures.

We also noticed in this study that 74.5% of the patients were between 18- 32 years old, figure (2), and this because that the young people want to get rid of glasses for cosmetic purpose, and we noticed that most of those young people (54.5%) of all patients lies between 23- 32 years old, because in Iraq this age usually is post graduation age and this is the age of financial independency.

In figure three we found that 97.65% of cases were myopia including low myopia, high myopia, low myopic astigmatism, and high myopic astigmatism, and only 2.35% of cases are hypermetropia, while myopic cases represent 9% of general population, and hypermetropic cases represent 26% of population⁽¹¹⁾. The reason behind this discrepancy is that most of hypermetropic cases can be overcome by accomodation in young age group and most of them do not need glasses early in life while myopia can not be overcome by accomodation and it nessesate glasses for correction of vision early in life.

Regarding post operative uncorrected visual acuity (UCVA) in all cases we find that 81.81% of cases achieved UCVA of 6/6 or better in comparison with FDA clinical trials of wave front guided LASIK procedure that achieved UCVA of 6/6 in 79% to 98% of eye⁽⁸⁻¹⁰⁾.

For low myopic eyes we find that 95.53% of

eyes achieved UCVA of 6/6 or better in comparison with FDA clinical trials that report that 67-86 % of eyes achieved UCVA of 6/6 or better⁽¹²⁻¹⁴⁾.

Regarding high myopia we notice that 44.76% of eyes achieved UCVA of 6/6 or better and 81.95% of eyes achieved UCVA of 6/9 or better and 100% of eyes achieved UCVA of 6/12 or better in comparison with FDA clinical trials that report that 66% to 71% of eyes achieved UCVA of 6/6 or better, 85% to 100% of eyes achieved BUVA OF 6/12 or better, and as myopia increases the predictability of the result is reduced and as the astigmatism increases the predictability of the result is reduced also^(15,16).

For hypermetropic eyes we notice that 100% of eyes achieved UCVA of 6/6 or better in comparison with FDA clinical trials that report that 59% of eye achieved UCVA of 6/6 or better⁽¹⁷⁾, and this discrepancy between FDA result may be due to small sample of hypermetropic eye (24 eyes) which may be not representative and large sample is recommended for better conclusoin.

Finally most improvement in refractive errors is measured in term of visual acuity (Snellen chart), however visual quality can not be measured solely by this means, some patient may experience diminished night vision, visual flactuations, halos, glare and sensitivity to light, these symptoms usually subside within 4-6 weeks for vast majority of patients⁽¹⁵⁾.

TABLES

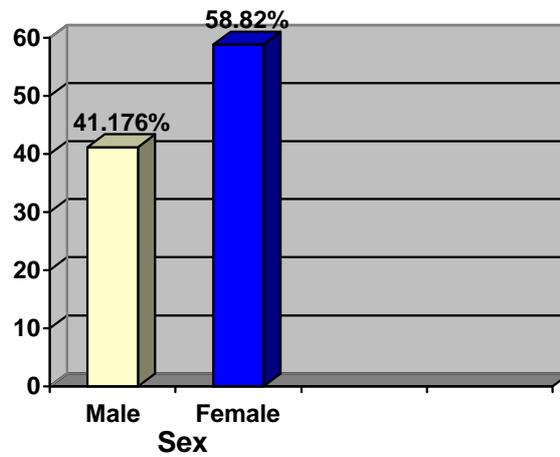


Figure (1): distribution of cases according to the sex.

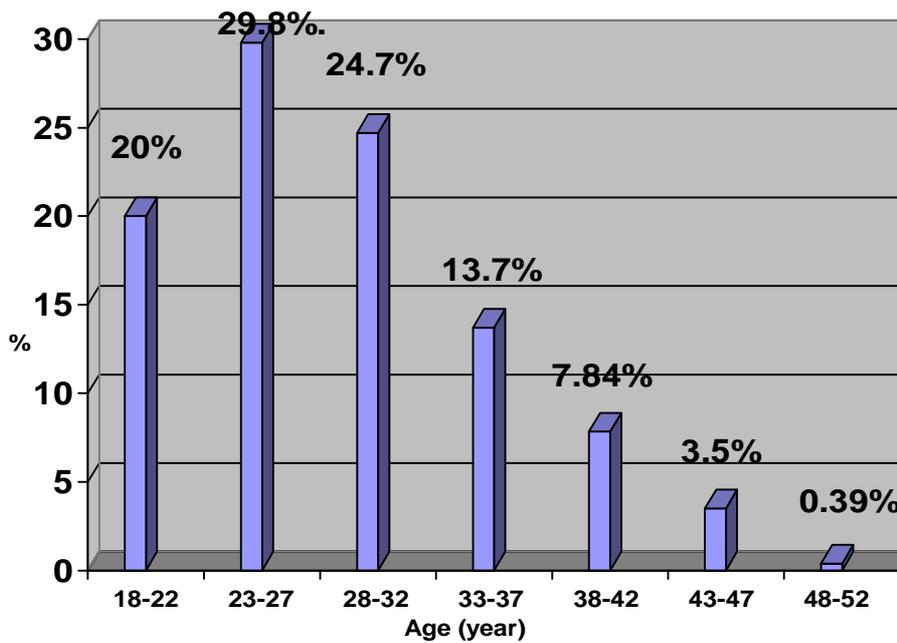


Figure (2): Distribution of cases according to age.

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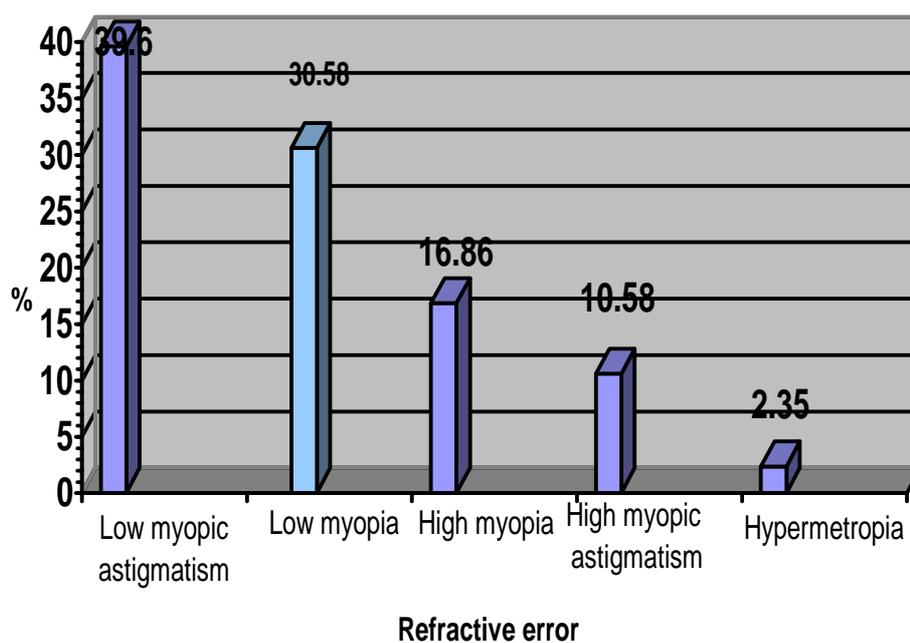


Figure (3): Distribution of cases according to refractive errors.

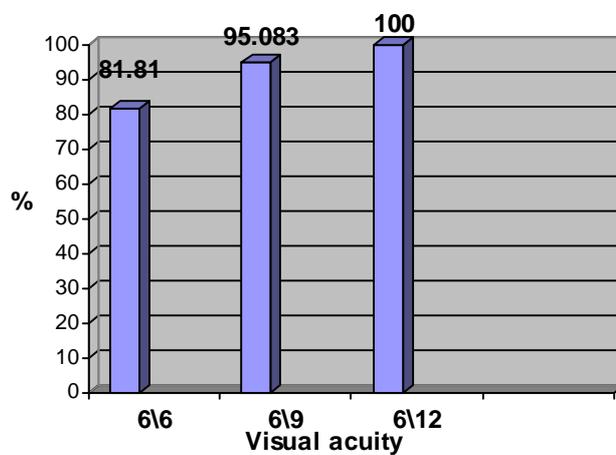


Figure (4): visual acuity of 1017 eyes following LASIK surgery.

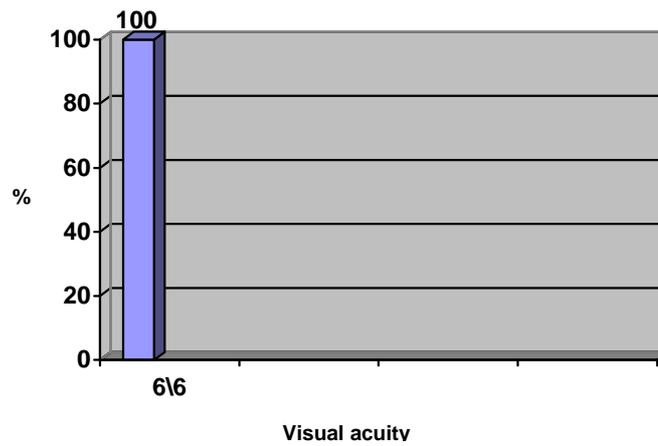


Figure (5): Visual acuity of hypermetropic eyes following LASIK surgery .

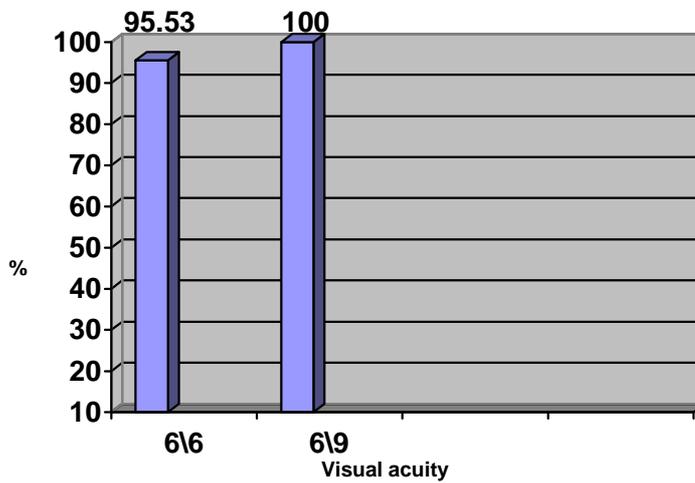


Figure (6): Visual acuity of low myopic eyes following LASIK surgery .

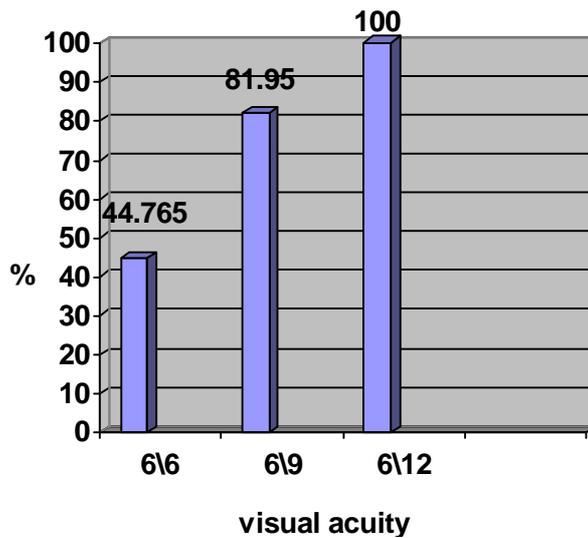


Figure (7): Visual acuity of high myopic eyes following LASIK surgery .

References:

- 1- James F. Vander, MD: Ophthalmology secrets, second edition 2008.
- 2- Garty DS, Kerr Muir KG, Marshall J: Excimer laser photorefractive keratectomy: 18- month follow-up. Ophthalmology 99:1206-1219, 1992.
- 3-Salah T, Waring GO III, et al:Excimer laser in-situ keratomileusis under a corneal flap for myopia of 2 to 20 diopters. Am J Ophthalmol 121:143- 155, 1996.
4. Salz jj (ed), Corneal Laser Surgery. St. Louis, Msby, 1995.
- 5- Tham VMB, Maloney RK: Microkeratome complications of laser in situ keratomileusis. Ophthalmology 107: 920-924,2000.
- 6- Warning GO III, Carr JD, Stalting RD, et al: Prospective randomized comparison of simultaneous situ and sequential bilateral laser in situ keratomileusis for the correction of myopia. Ophthalmology 106: 732-738, 1999.
7. Pop M, PayetteY:Photorefractive keratectomy versus laser in situ keratomileusis: A control-matched study. Ophthalmology 107:251-257, 2000.
8. El- Maghraby A, Salah T, Warning III, et al. Randomized bilateral comparison of excimer laser in situ keratomileusis and photorefractive keratectomy for 2.50 to 8.00 diopters of myopia. Ophthalmology. 1999;106:447-457.
- 9- Pop M, Payette Y, Photorefractive keratectomy versus laser in situ keratomilleusis. Ophthalmology, 2000;107:251-257.
- 10- Reviglio VE, et al. Laser in situ keratomilleusisfor myopia and hyperopia using the Lasersight 200 laser in 300 consecutive cases. J Refractive Surg. 2005;16:716-723.
- 11- O.J. Lehumann, D.H. Verity, et al: Clinical optics and refraction,2000.
- 12- El Danasoury MA, et al. Comparison of photorefractive keratectomy with excimer laser in situ keratomileusis in correcting low myopia. Ophthalmology, 1999;106:411-420.
13. FernandezAP, et al. Comparisonof photorefractive keratectomy and laser in situ keratomileusisfor myopia of -6 Dor less using the Nidek EC-5000 laser. J REFRACT SURG. 2000;16:711-715.
- 14- Tole DM, Mc Carty DJ, et al. Comparison of laser in situ keratomileusis and photorefractive keratectomy for the correction of myopia of -6 diopters or less. J Refract Surg. 2001;17:46-54.
15. American Academy of ophthalmology, Basic and clinical science course: Refractive surgery, 2005-2006.
16. Kawesh GM, Kezerian GM. Laser in situ keratomileusis for high myopia with the VISK Star laser. Ophthalmology. 2000;107-653-661.
- 17- Tabbara KF, El-Sheikh, et al. Laser in situ keratomileusis for the correction of hyperopia from +0.50 to +11.50 diopters with the keracor 117C laser. J Refract Surg. 2001;17:123-128.