

18th International Conference of the
Research Institute of Ophthalmology

RIO 2026

22 -23 JANUARY 2026
ROYAL MAXIM PALACE KEMPINSKI, CAIRO

**Bridging the gap
between the
Orbit and strabismus**

Sameh Galal M.D , FRCS

Associate Professor of Ophthalmology

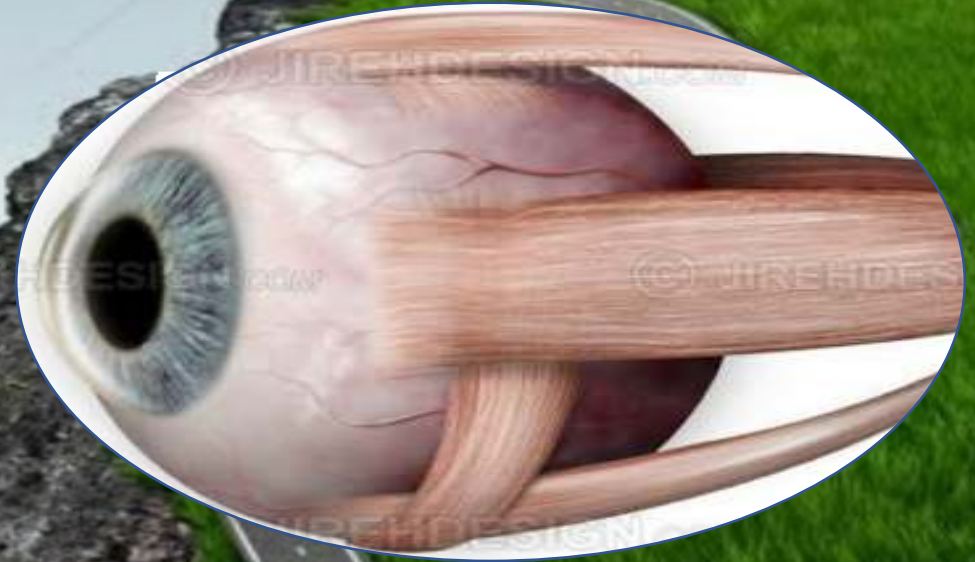
Head of Pediatric Ophthalmology , Strabismus and Genetics
Department

Research Institute of Ophthalmology



- Orbital abnormalities account for a small proportion of patients with strabismus.
- it is important to recognize these disorders for several reasons:
 - They may have important systemic and visual consequences.
 - Imaging studies are frequently indicated in patients in whom orbital abnormalities cause strabismus.
 - Treatment plan

- .Identify the cause**
- .Evaluate progression**
- . Predict prognosis**



Identify the orbital cause

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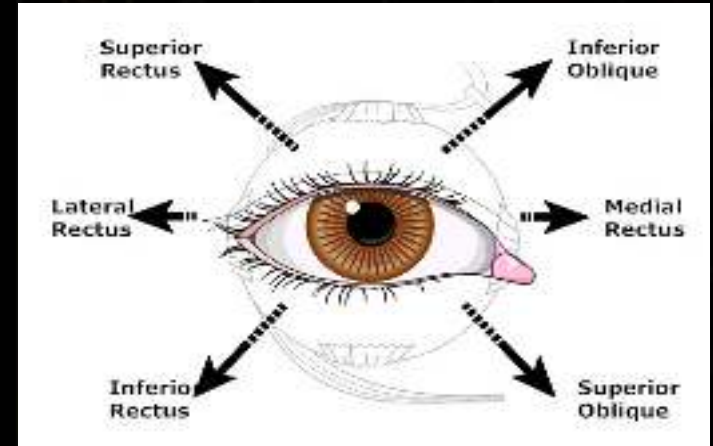


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MONOCULAR ELEVATION DEFECIENCY

- 1- Double elevator palsy**
- 2- Brown syndrome.**
- 3-Congenital fibrosis syndrome.**
- 4- Fracture orbital floor.**
- 5-TED.**



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FORCED DUCATION TEST (FDT)

RESTRICTION

Congenital fibrosis

Fracture orbital floor.

TED.



FREE MOTILITY

Double elevator palsy



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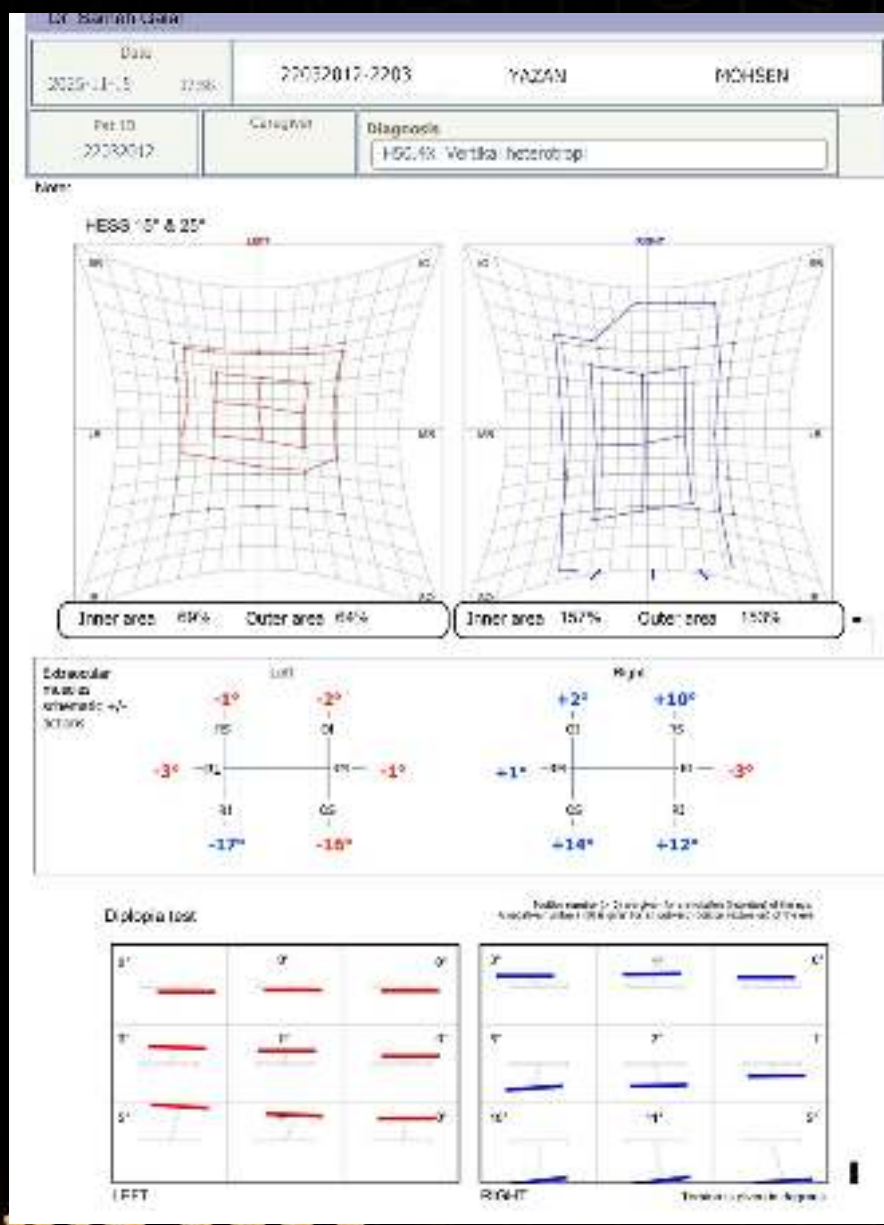
**What is the difference between anterior
and posterior fractures**



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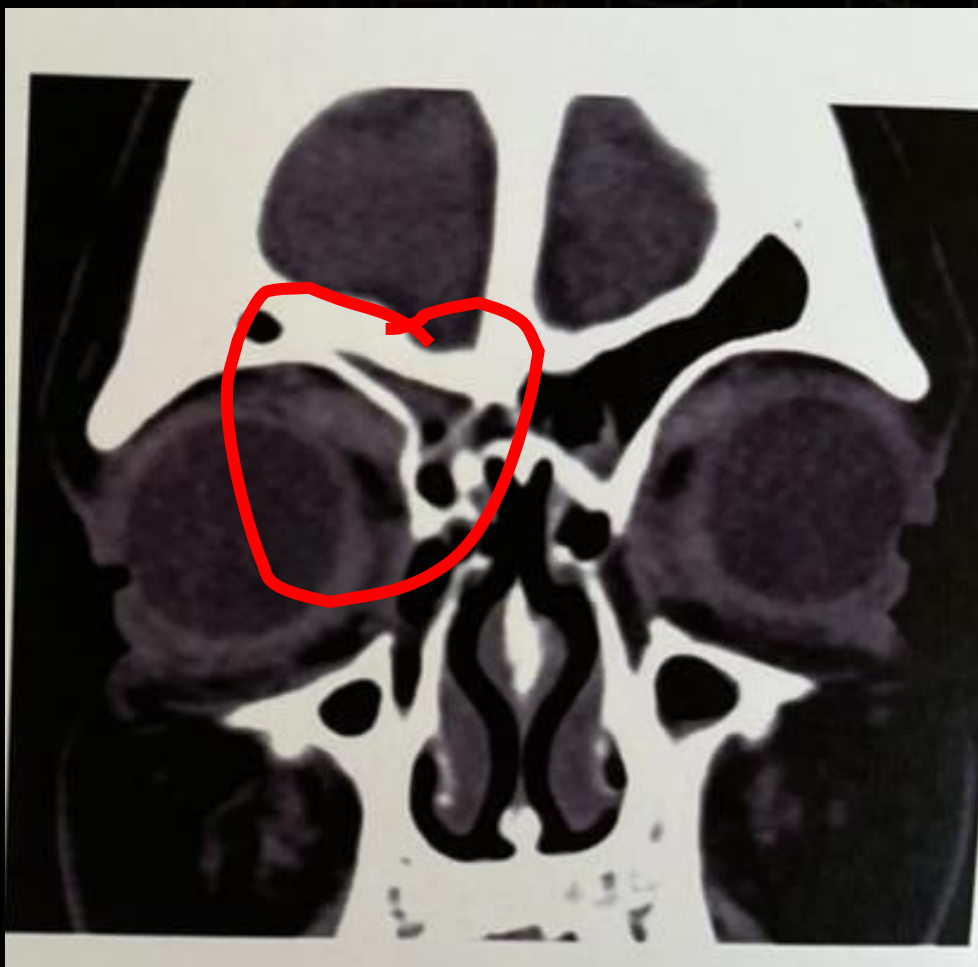


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- No evidence of intra or extra-conal masses.
- Intact bony boundaries of both orbits.
- *Bilateral maxillary, ethmoid and frontal sinusitis.*

OPINION:

- **Relative thickening of right superior oblique muscle tendon as described, for clinical correlation.**

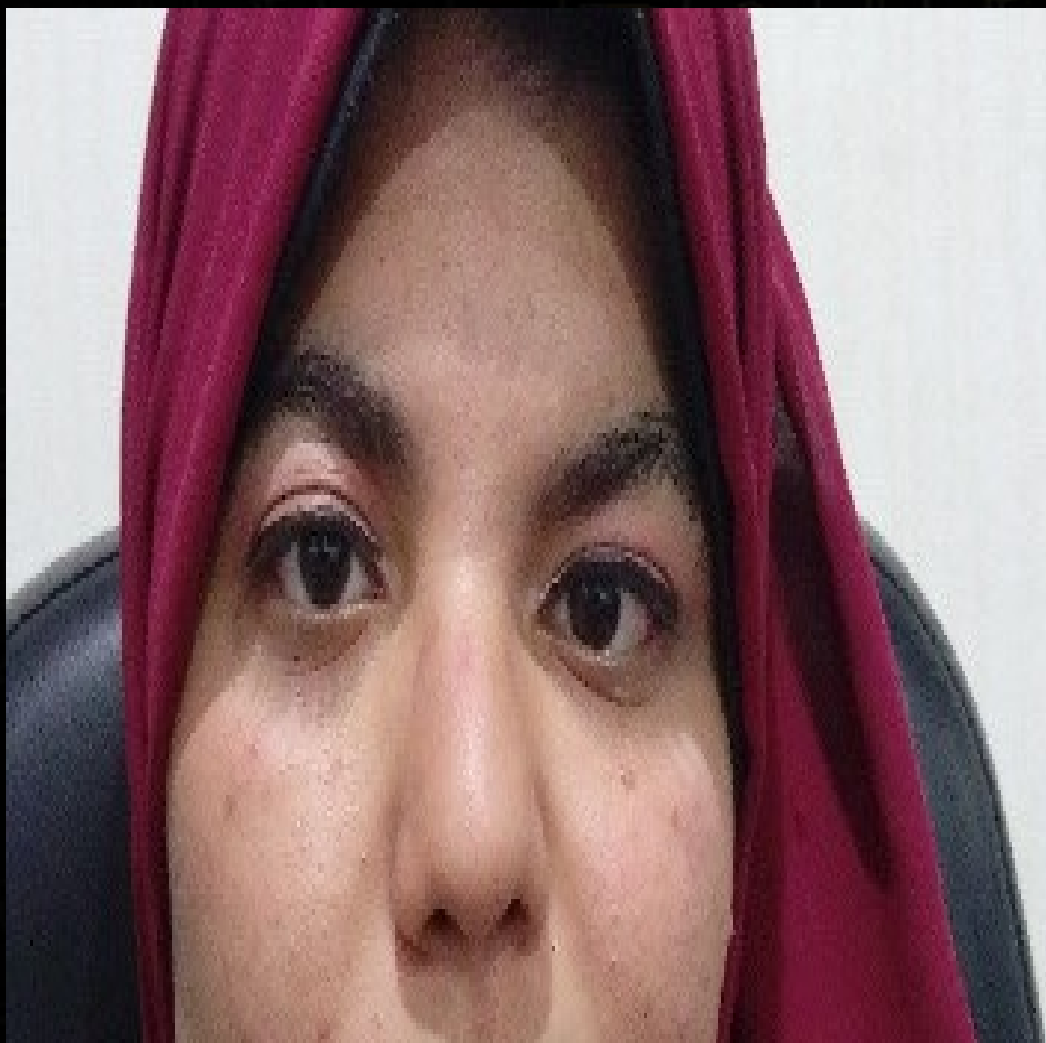
Dr. Moustafa Khairy, MD



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How to assess EOM improvement?

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How to assess EOM improvement?

1- Primary position

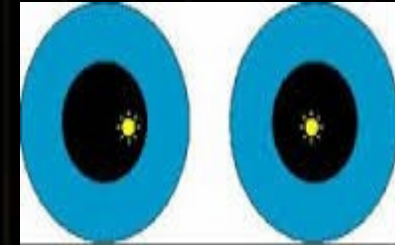


How to assess EOM improvement?

1- Primary position

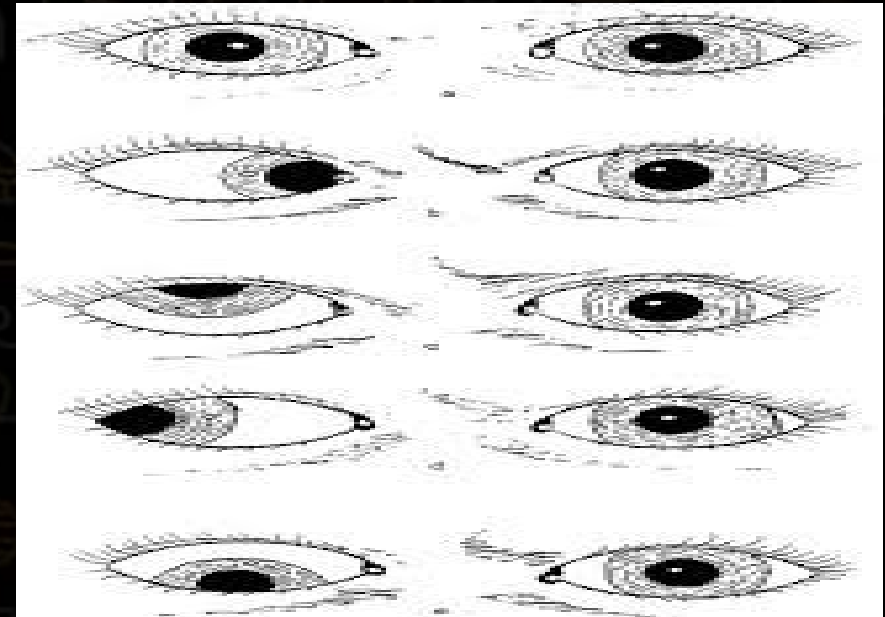
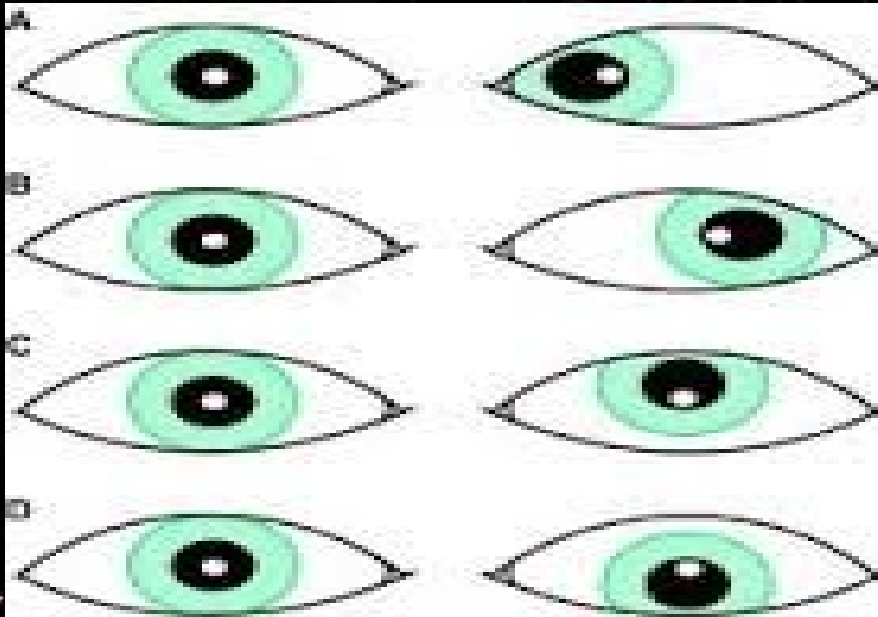
To look for MANIFEST deviations (TROPIA)

- *Light should be of medium intensity.*
- *pen light should be 50 cm or more from the patient's eyes.*
- *The test should be done for near and distance.*



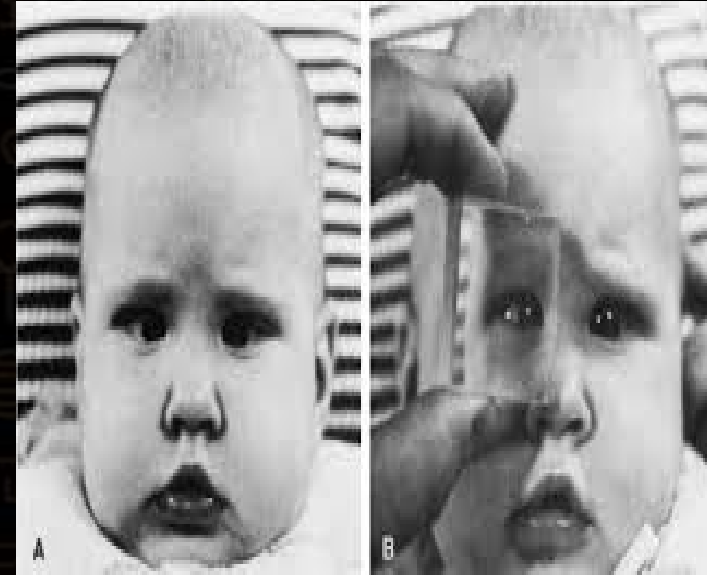
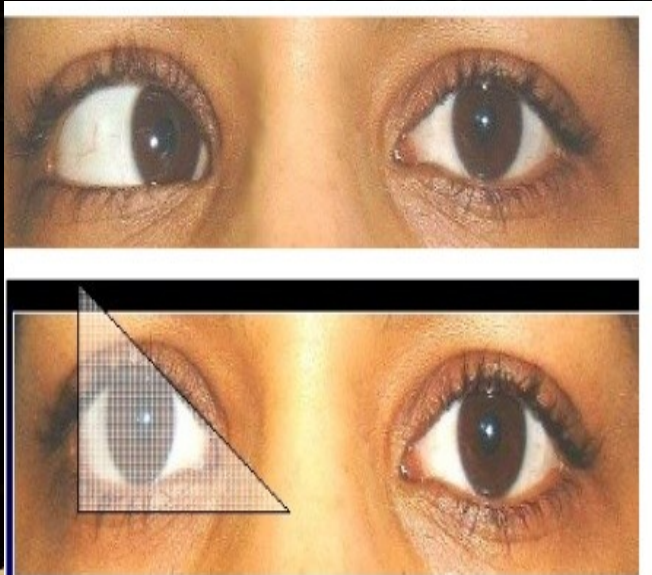
How to assess EOM improvement?

1- Primary position



How to assess EOM improvement?

1- Primary position



How to assess EOM improvement?

2- Limitation of motility



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How to assess EOM improvement?

2- Limitation measurement



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How to assess EOM improvement?

2- Limitation measurement



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How to assess EOM improvement?

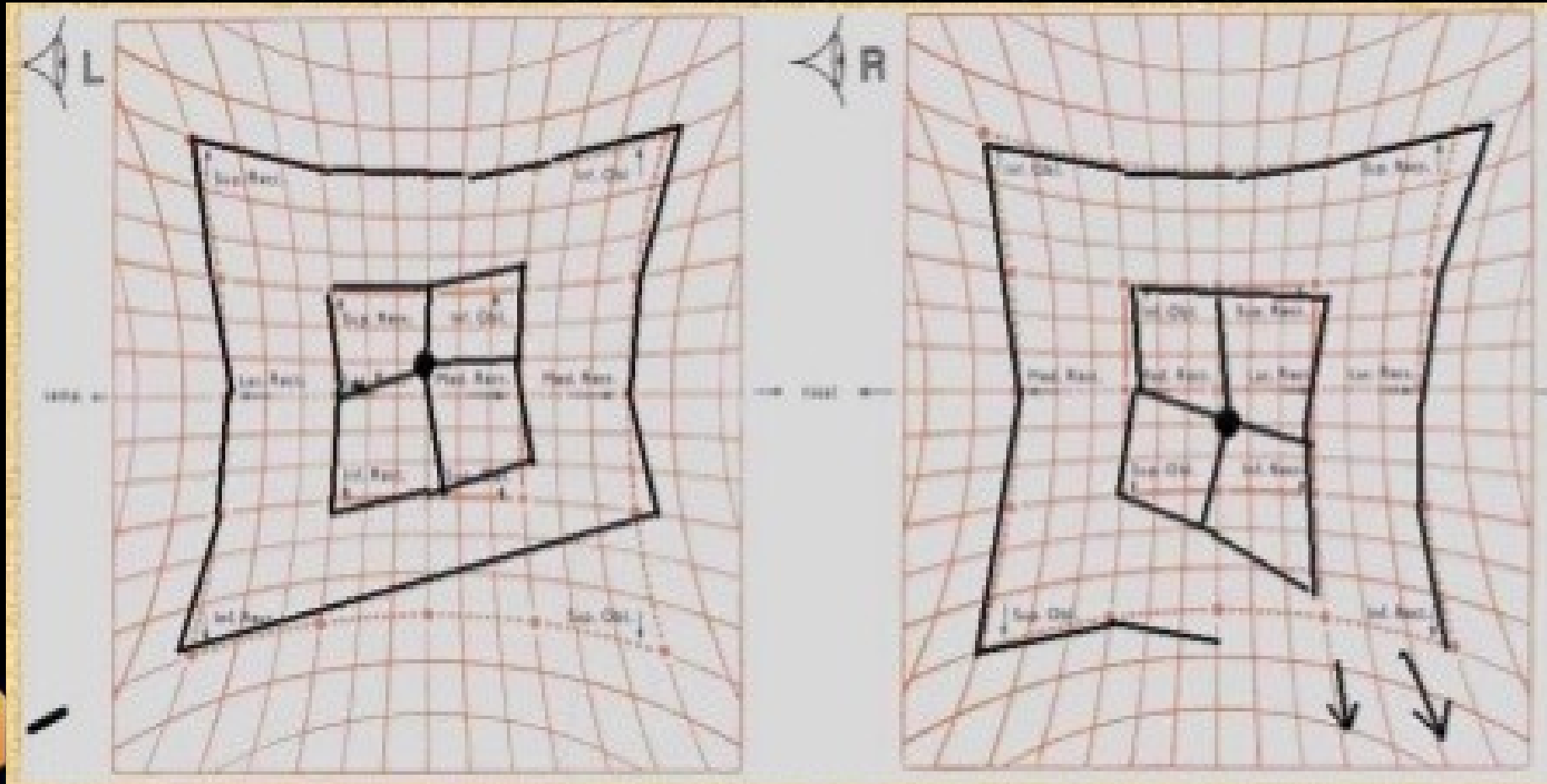
2- Limitation measurement



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How to assess EOM improvement?

2- Limitation measurement





Hesham Fouad Kamel

Date: 2019-12-15 12:00 Caregiver: KHALID KHAIDER SAIAD 11-10-1969

Diagnosis: H06.2 E05.0 Endokrin oftalmopati

Note: 01123610745

HESS 15° & 25°

Left

Outer area: 0%
Inner area: 125%

Right

Outer area: 84%
Inner area: 87%

Extraocular muscles schematic +/- actions

Left

Right

Left				Right			
to the left		Right fix		to the right		Left fix	
0° Exo	0°/R	2° Exo	2°/R/L	12° Eso	4°/R	7° Exo	5°/R/L
7° Eso	9°/R/L	15° Eso	8°/R/L	16° Eso	7°/R/L	7° Eso	5°/R/L
15° Eso	9°/R/L	17° Eso	8°/R/L	17° Eso	2°/R/L	15° Eso	7°/R/L

Angle measurements in prism diopters.
Torsion is given in degrees.
Positive number (> 0) are given for an intorsion (intorsion) of the eye.
A negative number (< 0) is given for an extorsion (extorsion) of the eye

View diplopia measurements

Tangententafel

(Nach Harms)

2/4



Zwei Prüferentfernungen auf einer Wand farblich unterschiedlich dargestellt, hier in Schwarz für die Prüferentfernung von 2,5m und in Grün für eine Prüferentfernung von 5,0m.

Two testing distances on the wall are represented using different colours. In this case in black for a distance of 2,5 m and in green for a distance of 5,0m.

Grüner Ring Projektor in jeder Prüferentfernung einsetzbar.

Green ring projector usable in every testing distance.



Stirnprojektor zur Projektion des weißen Fadenkreuzes

Headgear projector for the projection of the white cross-hair

Rollcontainer mit Stehpult in Patientennähe einsetzbar.

Rolling container with high desk near patient.



Tangententafel

(Nach Harms)

2/4

Zwei Prüftentfernungen auf einer Wand farblich unterschiedlich dargestellt, hier in Schwarz für die Prüftentfernung von 2,5m und in Grün für eine Prüftentfernung von 5,0m.

Two testing distances on the wall are represented using different colours. In this case in black for a distance of 2,5 m and in green for a distance of 5,0m.

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Rollcontainer mit Stehpult in Patientennähe einsetzbar.

Rolling container with high desk near patient.



Stirnprojektor zur Projektion des weißen Fadenkreuzes.

Headgear projector for the projection of the white cross-hair.



Tangententafel nach Harms, Modell „Diagonale Blau“ mit einer farbigen Diagonale, um ein präzises Ablesen der diagonalen Werte zu erleichtern. Die Diagonale lässt sich farblich an Ihre räumlichen Gegebenheiten anpassen. Grün, Gelb oder andere Farben sind möglich.

Standardgrößen:

- 2,35m x 2,35m mit einer 25° Ausführung für einer Prüftentfernung von 2,50m
- 2,90m x 2,90m mit einer 30° Ausführung für einer Prüftentfernung von 2,50m

Tangent board by Harms, model "Diagonal Blue" with a coloured diagonal, to make reading diagonal values precise and easier. The diagonal can be fitted to the conditions suited for your room with different colours. Green, yellow or other colours are possible.

Standard sizes:

- 2,35m x 2,35m with a 25° model, each with a testing distance of 2,50m.
- 2,90m x 2,90m with a 30° model, each with a testing distance of 2,50m.



Drehstuhl mit Ringarmlehnen und höhenverstellbarer Stahlfußring.

Swivel stool with armrests and height adjustable circular steel footrest.



25



New digital methods: remodelling the harms tangent scale setting

Martin A. Leitritz¹ · Marvin Bende¹ · Liane Jiang¹ · Jana Prokoph² · Focke Ziemssen³ · Karl Ulrich Bartz-Schmidt³ · Thomas Bende¹ · Dorothea Besch²

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Abstract

Purpose The aim of this study is to present a feasibility study to evaluate and compare a self-constructed, digital-based tangent scale using the Harms tangent screen test for the examination of patients' strabismus angles.

Methods The documented strabismus angles of 10 patients were measured at nine gaze-positions and compared using the Harms tangent screen test (Harms Screen) and a self-constructed digital screen test (Digital Screen). The primary outcome is the difference in the measured angles between both methods. Secondary outcomes include the duration of the examinations and the diagnostic conclusion based on the results of the measurements.

Results The datasets from 10 of 13 patients were used for comparisons (median age 52 years; females 5; males 5). All measurements showed a mean of 1.77° (SD 2.95°) in horizontal deviations and 1.11° (SD 2.23°) in vertical deviations. The two methods showed differences (> 5°) in 12 cases (13.3%) for horizontal angle measurements and in four cases (4.4%) for vertical angle measurements. The median examination time was 238 s (range 60–430 s) for the Harms Screen and 150 s (range 120–600 s) for the Digital Screen tests. The diagnostic conclusions were identical for both methods.

Conclusions The feasibility of the experimental digital setup in principle is shown. Despite some deviations in the measured

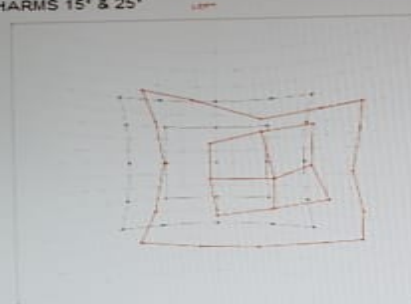
Hesham Fouad Kamel

Date: 2019-12-15 12:1 Caregiver: 11-10-1969 KHALID KHAIDER SALAD

Diagnosis: H06.2 E05.0 Endokrin oftalmopati

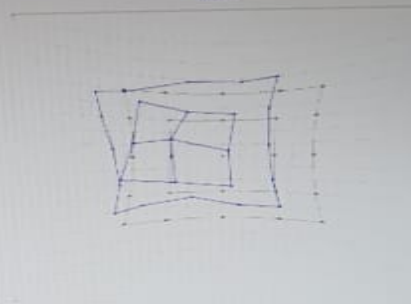
Note:

HARMS 15° & 25°



Left

Outer area: 125%
Inner area: 113%



Right

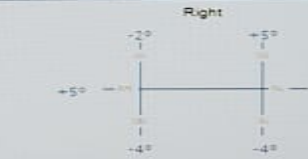
Outer area: 80%
Inner area: 96%

Extraocular muscles schematic +/- actions

Left



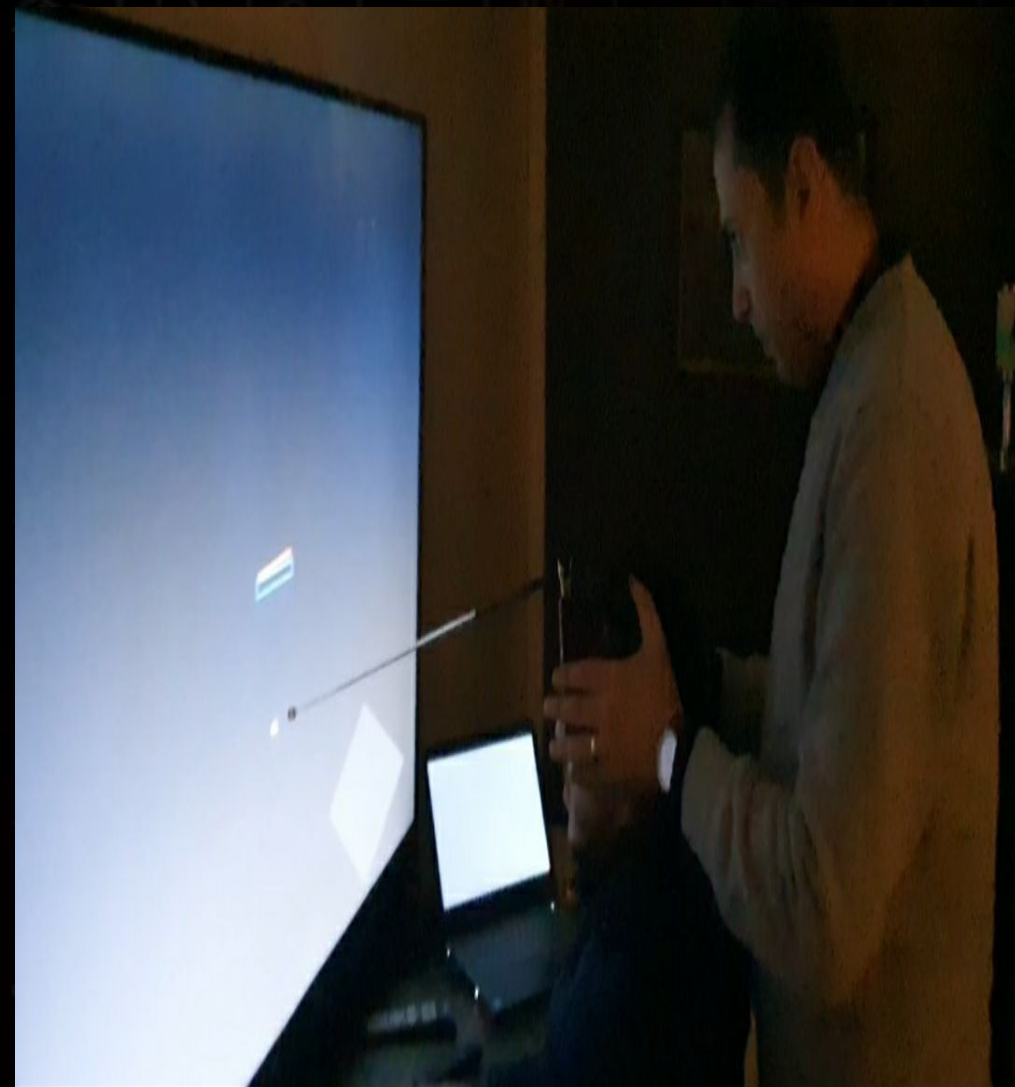
Right



Left			Right		
to the left	Right fix	to the right	to the left	Left fix	to the right
10° Eso 5°R/L	23° Eso 13°R/L	15° Eso 8°R/L	11° Eso 3°L/R	15° Eso 7°R/L	20° Eso 9°R/L
10° Eso 1°R/L	25° Eso 13°R/L	15° Eso 7°R/L	8° Eso 0°R/L	20° Eso 13°R/L	20° Eso 8°R/L
9° Eso 5°R/L	15° Eso 14°R/L	17° Eso 3°R/L	5° Eso 7°R/L	15° Eso 14°R/L	10° Eso 8°R/L

Angle measurements in prism diopters.
Torsion is given in degrees.
Positive number (> 0) are given for a intorsion (intorsion) of the eye.
A negative number (< 0) is given for an outward rotation (extorsion) of the eye.

View diplopia measurement

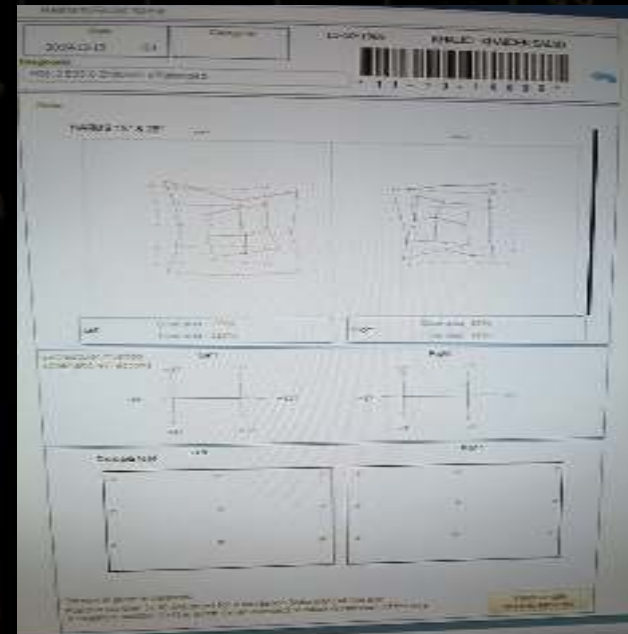
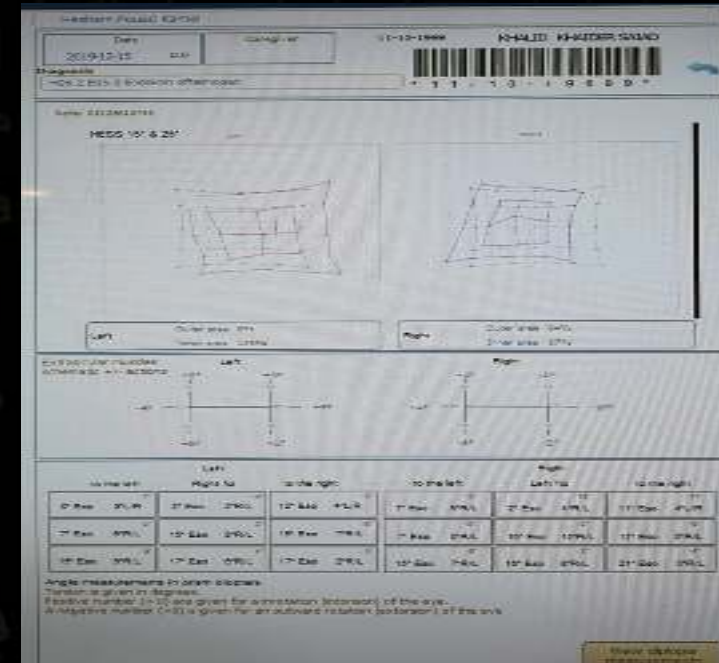


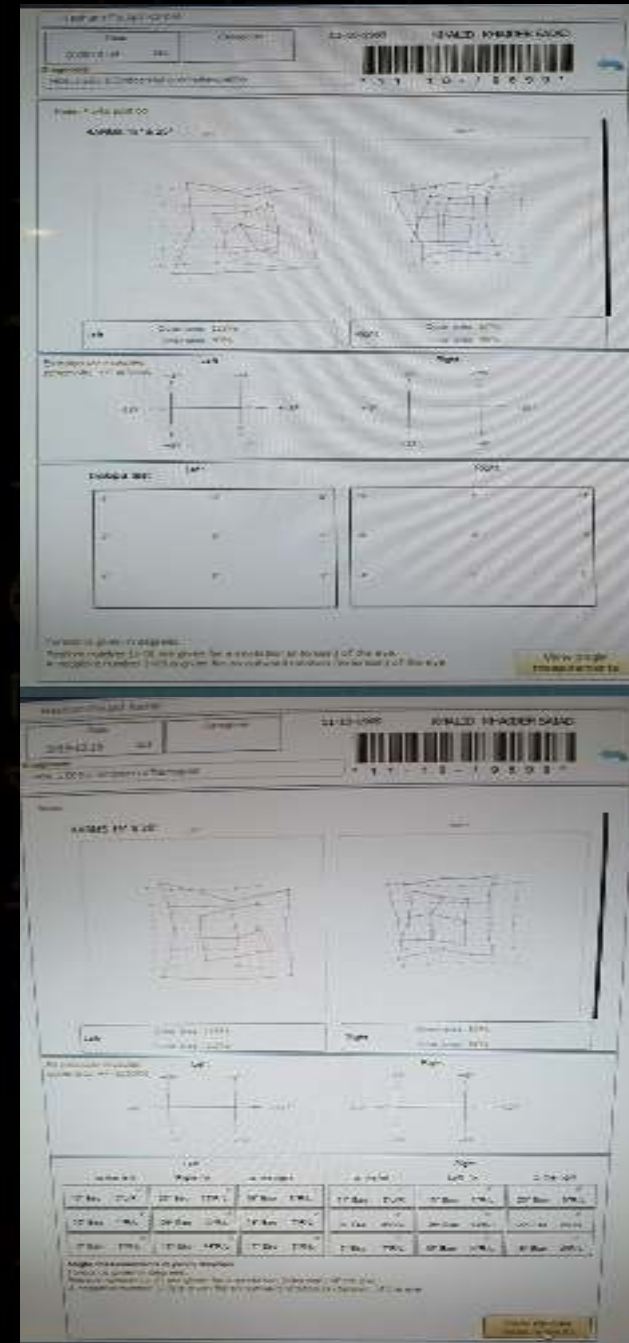


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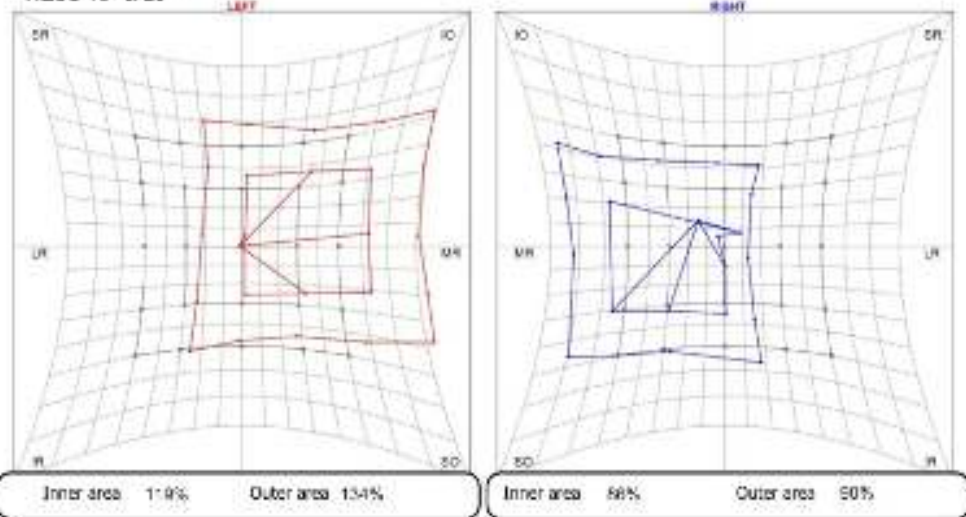
Before

After





HESS 15° & 25°

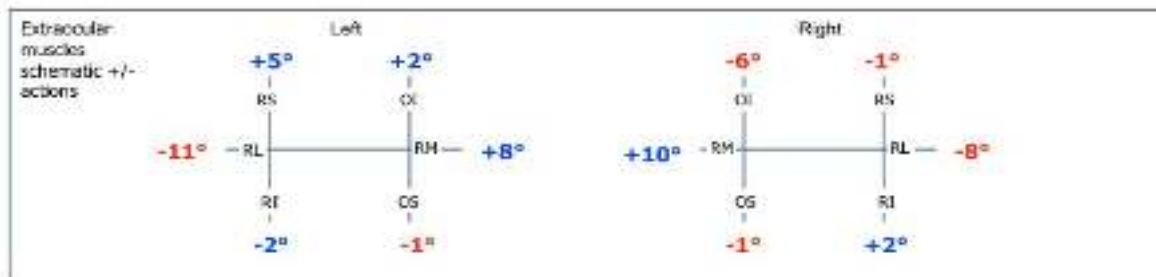
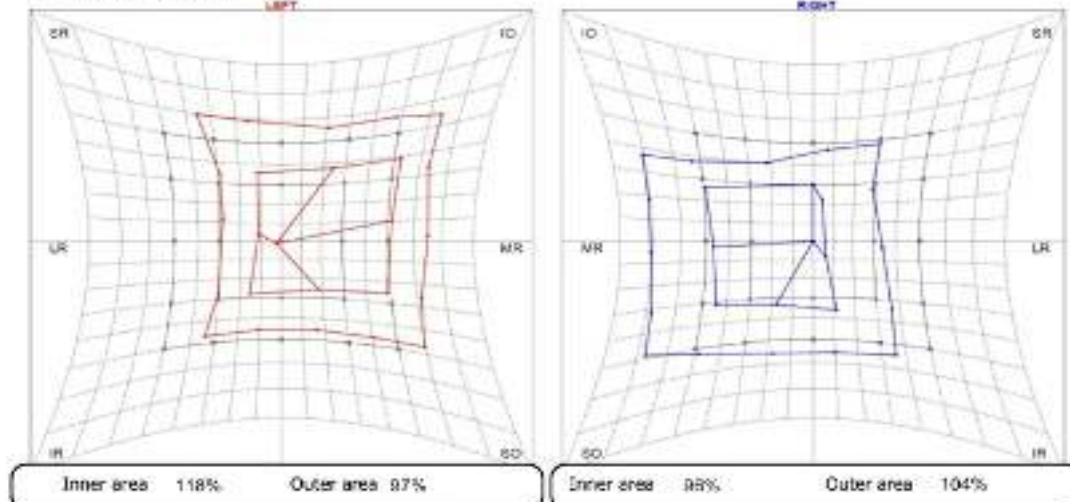


Left			Right		
to the left	Right fix	to the right	to the left	Left fix	to the right
28° Eso 9°L/R	30° Eso 4°L/R	26° Eso 2°L/R	21° Eso 7°L/R	28° Eso 7°L/R	28° Eso 9°L/R
25° Eso 5°L/R	1° Eso 0°L/R	27° Eso 4°L/R	19° Eso 3°L/R	13° Eso 12°R/L	32° Eso 5°L/R
21° Eso 1°R/L	24° Exo 5°L/R	28° Exo 11°L/R	17° Eso 3°R/L	23° Eso 1°L/R	28° Eso 6°L/R

Angle measurements in prism diopters

Note:

HARMS 15° & 25°



Left			Right		
to the left	Right fix	to the right	to the left	Left fix	to the right
13° Eso 9°L/R	19° Eso 5°L/R	12° Eso 4°L/R	16° Eso 11°L/R	19° Eso 8°L/R	17° Eso 2°L/R
15° Eso 10°L/R	2° Exo 1°R/L	13° Eso 2°L/R	18° Eso 5°L/R	0° Exo 0°L/R	14° Exo 3°L/R
14° Exo 3°L/R	14° Eso 4°L/R	8° Eso 2°L/R	15° Eso 1°R/L	16° Eso 5°L/R	12° Eso 4°L/R

Angle measurements in prism diopters

6. Orbitopathy

History of GO, initial symptoms
+ thyroid status prior to onset

Onset (month or season: sp, su, au, wi) / yyyy

6.1 Previous and current treatments

a. Systemic steroids Never Current IV steroids Previous steroids
Current oral steroids Months since stopping

b. Orbital irradiation No Yes *completed* (mm yyyy)

c. Surgery for GO No Yes specify (with dates)

d. Selenium No Yes

e. Other previous or current treatment for GO

No Yes start date specify

Is this treatment continuing? No Yes

6.2 Current symptoms (encircle all reported)

orbital pain gaze evoked pain grittiness / watery / photophobia diplopia blurred vision

6.3 Examination of eyes

RIGHT

LEFT

(Corrected) Visual acuity								
Refraction								
Relative Afferent Pupil Defect			No Yes			No Yes		
HRR (...../6) OR Ishihara (...../15)		Colour blind?	 / 5/15			 / 5/15		
Soft tissues	Active Lid swelling	Upper	Unsure moderate	Nil or equivocal severe		Unsure moderate	Nil or equivocal severe	
		Lower	Unsure moderate	Nil or equivocal severe		Unsure moderate	Nil or equivocal severe	
	Lid erythema	Upper	No	Yes		No	Yes	
		Lower	No	Yes		No	Yes	
	Conjunctival redness		No or equivocal	Yes		No or equivocal	Yes	
Lid positions <i>Ref: Upp limbus</i> <i>Ref: Low limbus</i>	Palpebral aperture							
	Upper lid retraction							
	MRD1							
	Lower lid retraction							
	Levator function							
	Bells' phenomenon		Yes	No		Yes	No	
	Lagophthalmos		No	Yes		No	Yes	
	Is cornea exposed?		No	slight	Yes	No	slight	Yes
Lateral flare		No	slight	Yes	No	slight	Yes	
Proptosis	Intercanthal Distance							
	Globe Retropulsion		soft	reduced	firm	soft	reduced	firm

Motility (complete if no OD assessment)



6. Orbitopathy

History of GO, initial symptoms
+ thyroid status prior to onset

Onset (month or season: sp, su, au, wi) / yyyy

6.1 Previous and current treatments

a. Systemic steroids Never

Current IV steroids
Current oral steroids

Previous steroids
Months since stopping

b. Orbital irradiation No

Yes completed

(mm yyyy)

c. Surgery for GO No

Yes

specify
(with
dates)

d. Selenium No

Yes

e. Other previous or current treatment for GO

No Yes

start date

specify

Is this treatment continuing? No Yes

6.2 Current symptoms (encircle all reported)

orbital pain

gaze evoked pain

grittiness / watery / photophobia

diplopia

blurred vision

6.3 Examination of eyes

RIGHT

LEFT

(Corrected) Visual acuity								
Refraction								
Relative Afferent Pupil Defect			No Yes			No Yes		
HRR (...../6)		Colour blind?	 / 5			 / 5		
OR Ishihara (...../15)			 / 15			 / 15		
Soft tissues	Active Lid swelling	Upper	Unsure Nil or equivocal moderate severe		Unsure Nil or equivocal moderate severe			
		Lower	Unsure Nil or equivocal moderate severe		Unsure Nil or equivocal moderate severe			
	Lid erythema	Upper	No Yes		No Yes			
		Lower	No Yes		No Yes			
Conjunctival redness		No or equivocal Yes		No or equivocal Yes				
Lid positions Ref: Upp limbus Ref: Low limbus	Palpebral aperture							
	Upper lid retraction							
	MRDI							
	Lower lid retraction							
	Levator function							
	Bells' phenomenon		Yes No		Yes No			
	Lagophthalmos		No Yes		No Yes			
Is cornea exposed?	No slight Yes		No slight Yes		No slight Yes			
	No slight Yes		No slight Yes		No slight Yes			
	Lateral flare							
Proptosis	Inter-canthal Distance							
	Globe Retropulsion	soft reduced firm			soft reduced firm			

Motility (complete if no OD assessment)

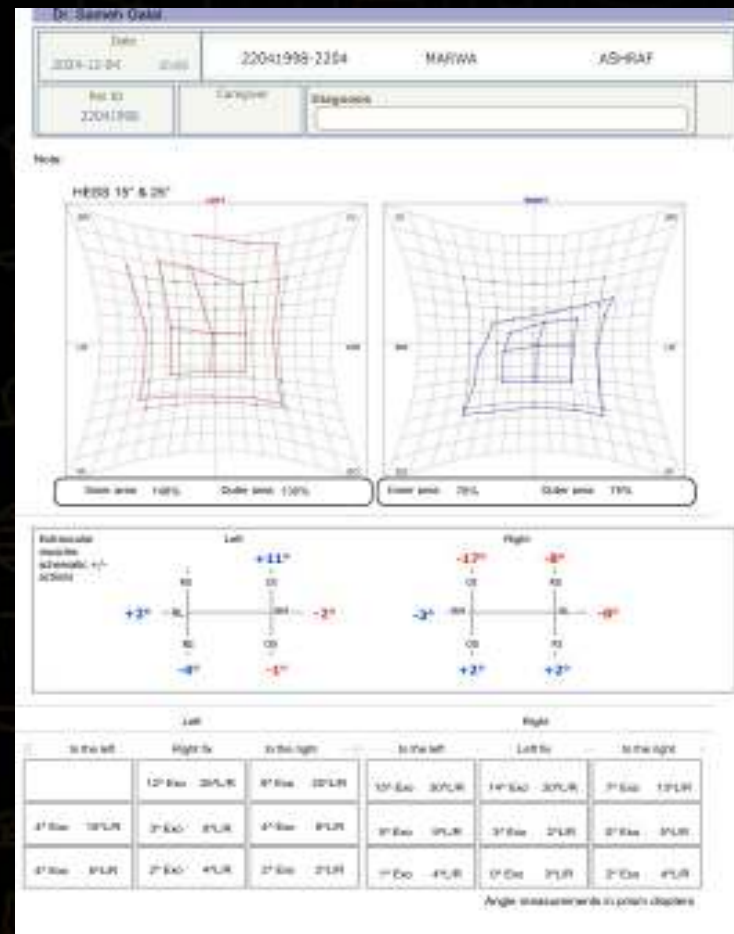
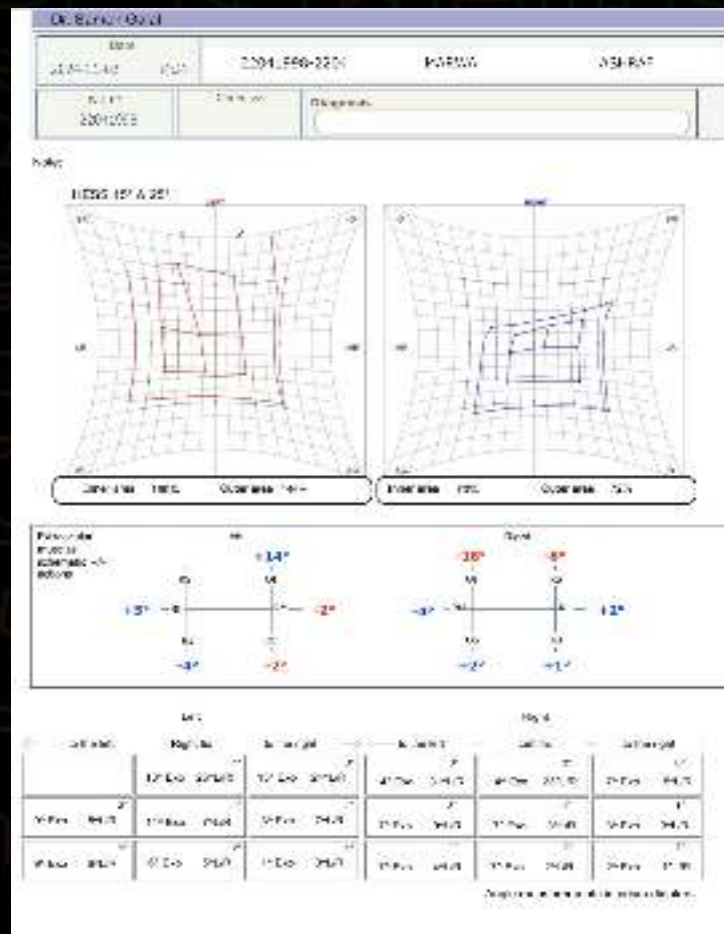
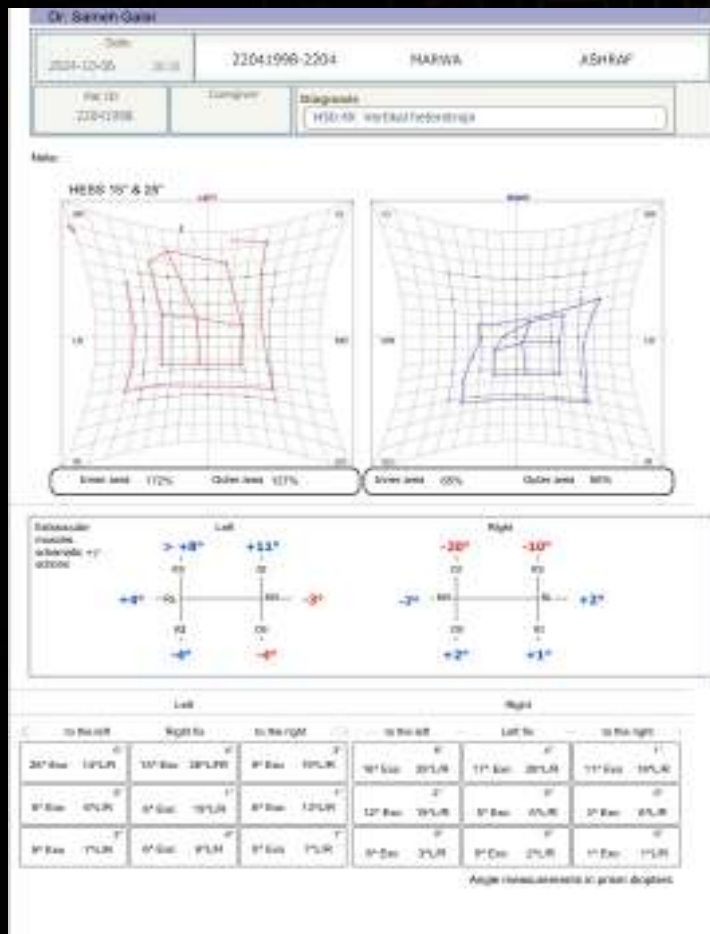




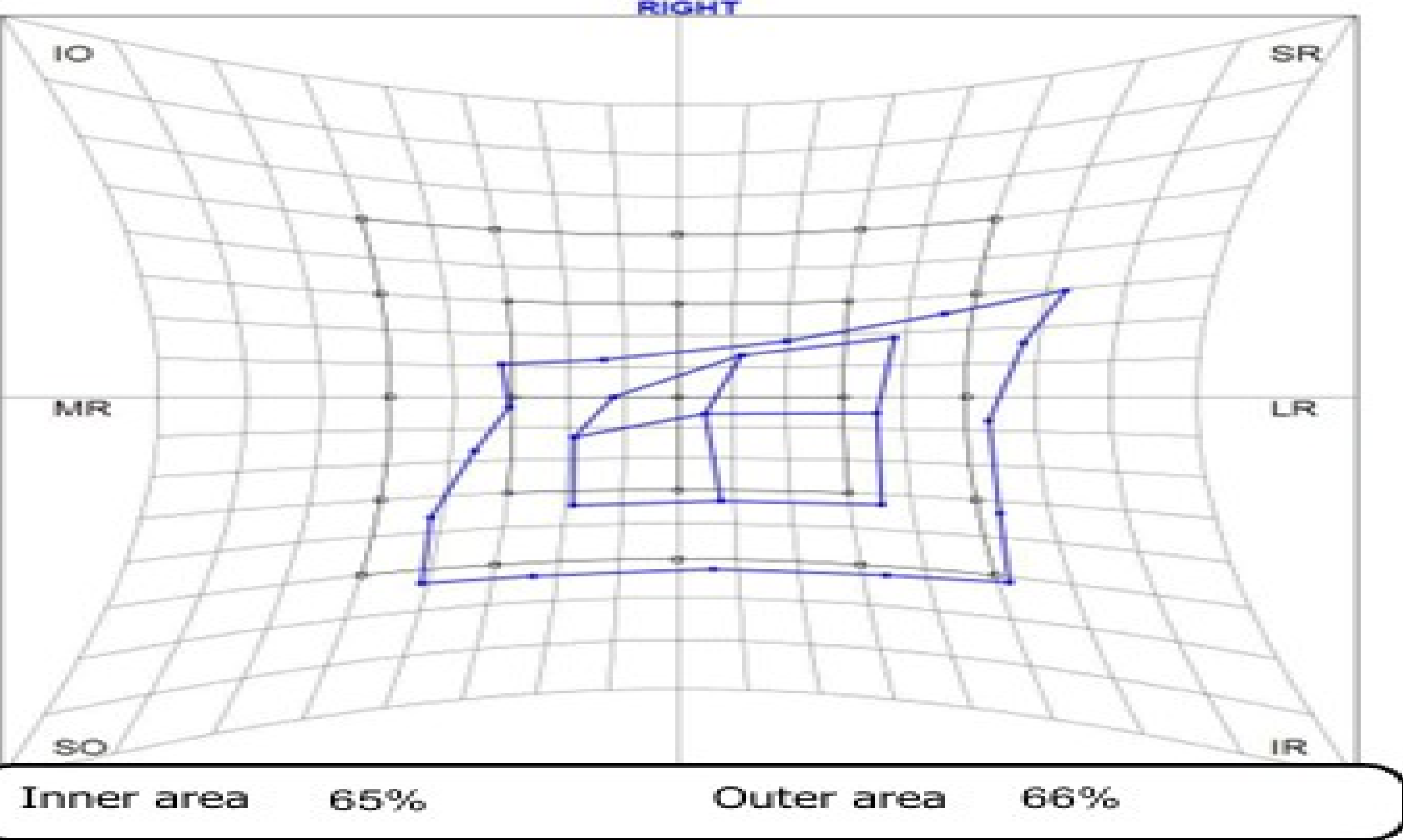
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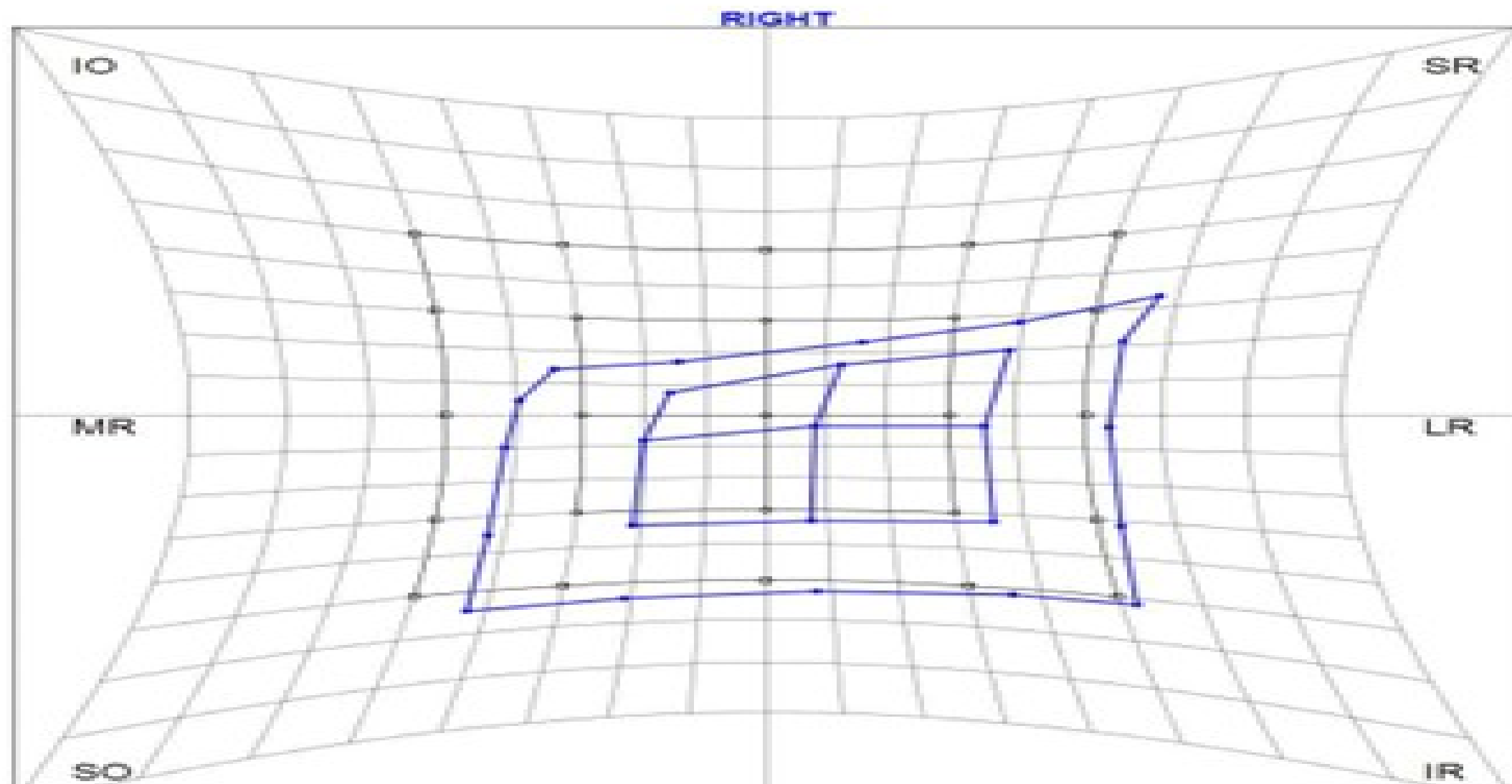






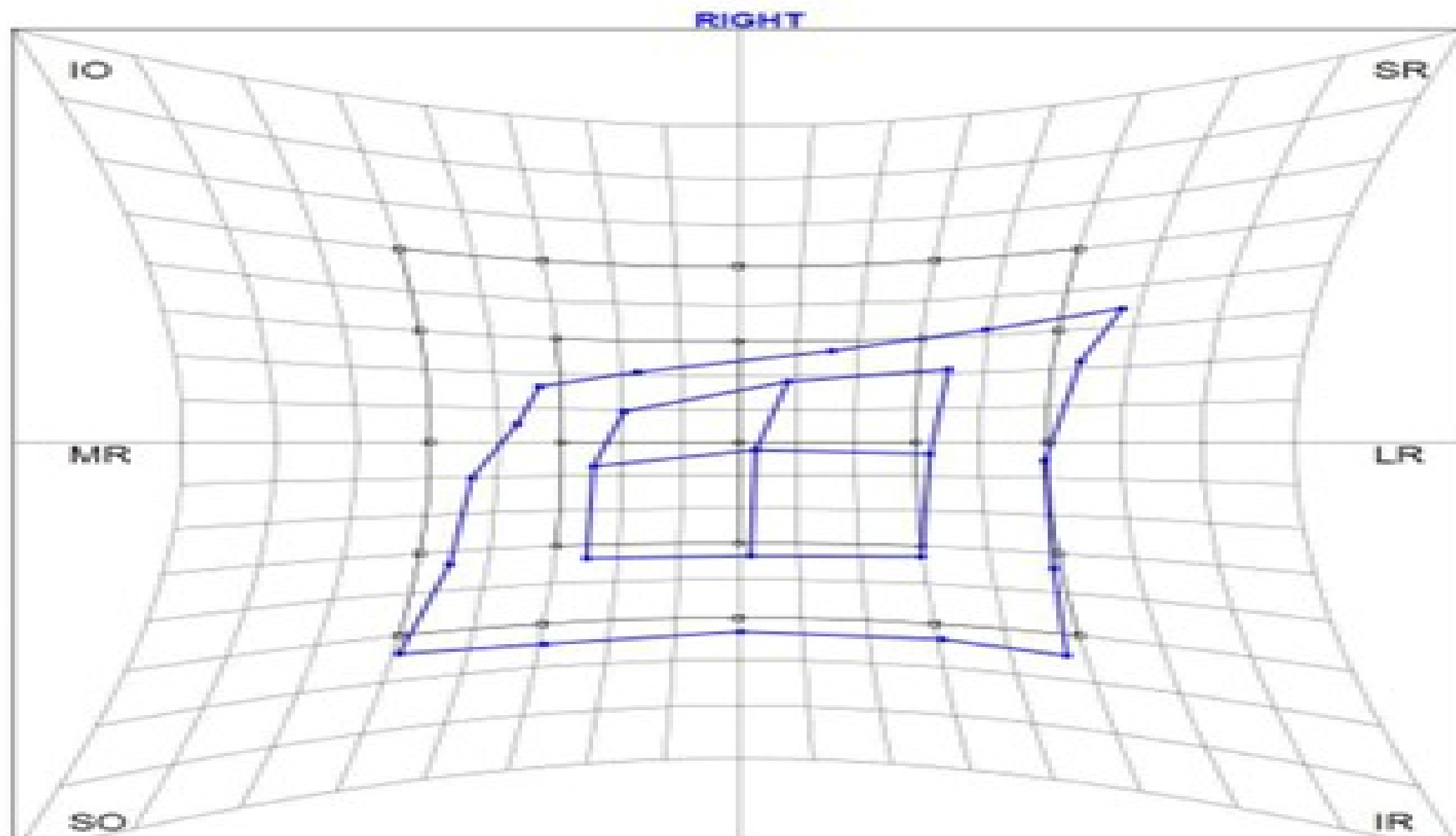
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Inner area 73%

Outer area 72%



Inner area 76%

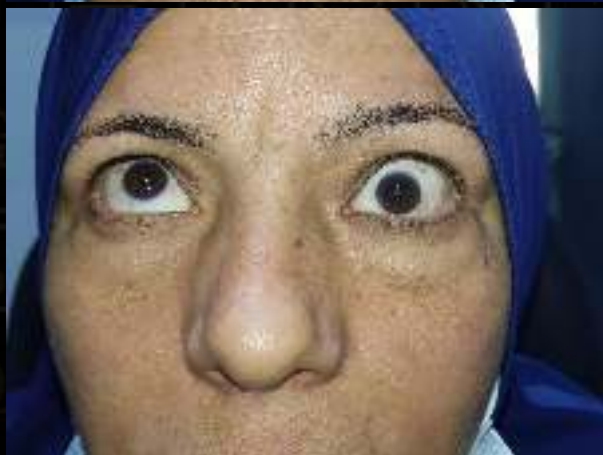
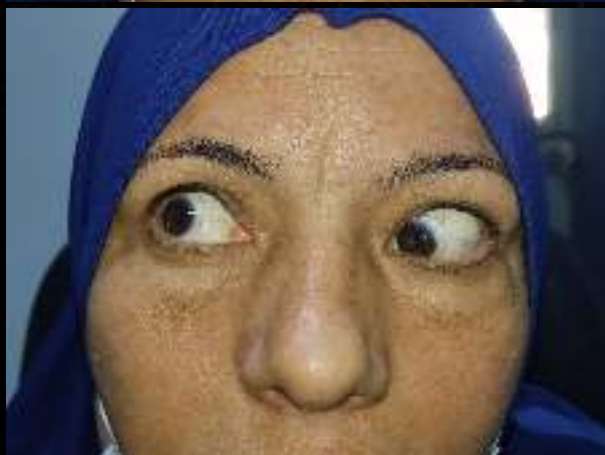
Outer area 75%



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. primary angle of deviation.

. Degree of limitation .

. FDT :

- compare propulsion and retropulsion.
- Before and after conjunctival incision .
- before and after muscle disinsertion.

. Muscle elasticity





Before

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1st day post op.

thank you