



## **Duane's Retraction Syndrome – Easy to Understand**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author PHC had wrote the introduction and conclusion part of this article. Author BHS had managed the abstract and literature review along with the formatting of the article. Both authors had read and approved the final manuscript.*

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### **ABSTRACT**

This paper describes simplified techniques to understand Duane's Retraction Syndrome for optometrists, ophthalmologists and medical students.

*Keywords: Duane's retraction syndrome; Co- contraction syndrome; 6<sup>th</sup> nerve agenesis.*

### **1. INTRODUCTION**

Duane's Retraction Syndrome mainly occurs due to underdevelopment of the 6<sup>th</sup> cranial nerves and nucleus. It is also known as Co-Contraction Syndrome. The meaning of co-contraction is "The two muscles will be contracted simultaneously during any horizontal movement". The stimulation which comes

from the 6<sup>th</sup> nerve to lateral rectus muscle, will simultaneously stimulate the medial rectus muscle also. But according to its function and nerve supply, it is contradictory [1,2,3, 4,5].

Duane's Retraction Syndrome is classified as follows: (From most common to the least common) [2,6,7,8].

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DRS type 1 (most common)  
DRS type 3  
DRS type 2  
DRS type 4 / Synergist movement (least familiar)

## 2. DRS TYPE 1

Here the eye will be adducted more as compare to abducted. Because here medial rectus will be stimulated more as compared to lateral rectus. This type is most common because it occurs due to 6<sup>th</sup> nerve agenesis so more stimulation from the oculomotor nerve will reach to medial rectus muscle as compared to lateral rectus [2,8].

## 3. DRS TYPE 3

Here equal amount of abduction and adduction occurs due to equal amount of stimulation provided to both medial and lateral rectus muscles. It is the second most common type [2,8].

## 4. DRS TYPE 2

Here eye is more abducted as compare to adduction. Here, lateral rectus muscle is stimulated more by the oculomotor nerve as compared to medial rectus muscle. It is very uncommon condition according to muscle stimulation.

## 5. DRS TYPE 4

It is also known as synergist eye movement. Here, during adduction eye will be abducted. But this abduction is paradoxical [2].

## 6. INDICATIONS FOR SURGERY

Surgical intervention is needed when a considerable amount of misalignment in the primary position, a noticeable amount of head posture, Narrowing of palpebral fissure due to retraction and significant upshoot and downshoot. Although amblyopia is rare in this case, if it is present it should be treated prior to the surgery [2,3,4,9].

## 7. SURGICAL TREATMENT

### 7.1 DRS Type 1

Here eye position will be towards nose, i.e. esotropia and face turn will be ipsilateral, i.e. face turn will be towards the nose. So, in DRS Type 1,

Medial Rectus muscle will be contracted and tightened, so ipsilateral medial rectus recession between 5 to 7 mm is needed. Sometimes 5 to 10 degree of overcorrection is needed. i.e. some amount of exotropia is created in primary position by the surgeon.

### 7.2 DRS Type 3

Here nerve stimulation is equal to medial and lateral rectus muscle from third cranial nerves. So equal amount of abduction and adduction occurs. Here face turn is away from the DRS eye. In this case, Lateral Rectus muscle is contracted and tightened, so ipsilateral lateral rectus recession is required.

## 8. CONCLUSION

In Duane's Retraction Syndrome, both Lateral rectus and Medial Rectus Muscles are contracted simultaneously. Stage 1 is most common which is followed by Stage 3, Stage 2 and least common is synergistic movement.i.e. Stage 4.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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