

## Cauda equine syndrome and role of time of surgery

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### Abbreviations :

CES =cauda equina syndrome

POP=postoperative period

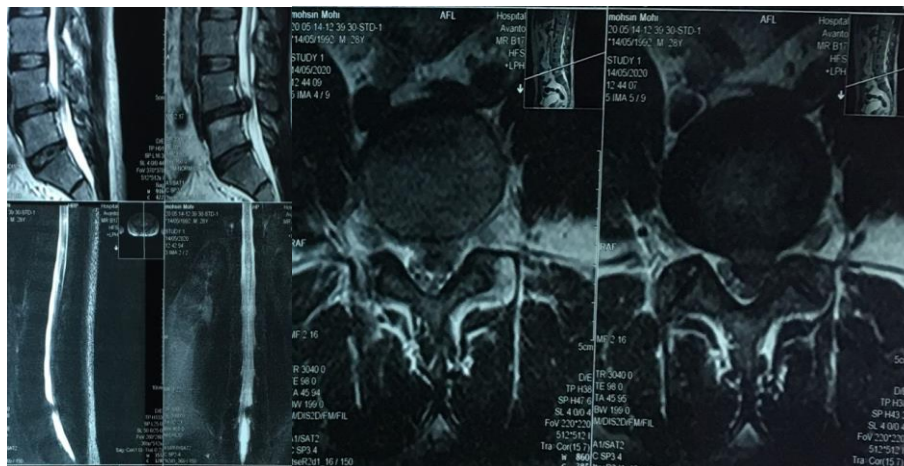
### Abstract

Obstract designed to assess the correlation between duration of the presentation of CES and the role of time of surgical decompression where time of the illness was taking from beginning of the urinary complication whether it was in form of urinary retention or over flow enuresis until the time of surgical decompression , where 13 patients were selected with classical presentation of CES in different time periods of presentation and grouped in 3 groups with 4 days , less than week and less than 2 weeks after urinary complications who treated surgically by open discectomy and decompression of nerve root (roots ) of pathology and the result was concluded at 3 periods of follow up postoperatively in 1<sup>st</sup> week ,one month and 3 month according to 3 main data; improvement of backache and sciatica , power of leg muscles and urinary and bowel function.

### Introduction :

CES is a rare but serious condition occurring in approximately 1% to 3% of patients with herniated lumbar discs. Patients with CES present with dull and sever low backache radiating in a sciatic distribution, associated with paresthesia and weakness or paralysis of lower extremities and areflexia , and bowel or

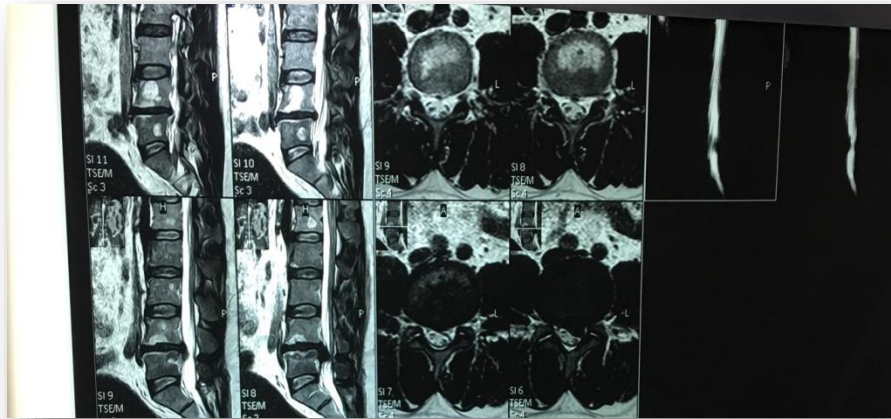
bladder dysfunction due to spinal nerve root compression.CES regard as a true surgical emergency necessitate urgent surgical decompression. It is generally accepted that surgery should be performed within 6 hours of symptom onset in order to minimize neurologic deficit; however, this is seldom achieved. [1]



**Fig. 1: young man with bladder dysfunction 3 day duration**

Luschka is the first one who described lumbar disc protrusion in 1858 [2]. Then another 50 years before the first procedure of discectomy was done and another 30 years later until Mixter and Barr were described the syndrome of CES [3,4]. The natural history and pathogenesis of CES is not clearly defined. One hypothesis is that large central or paracentral disc herniation

cause compression of the lumbosacral nerve roots below the level of the Conus Medullaris. It is not clear how much canal compression leading to CES. CES has been reported with less than 25% canal compromise [5]. Another hypothesis is that CES is chemical mediated with inflamed and oedematous neural structures being found on pathological samples.[6].

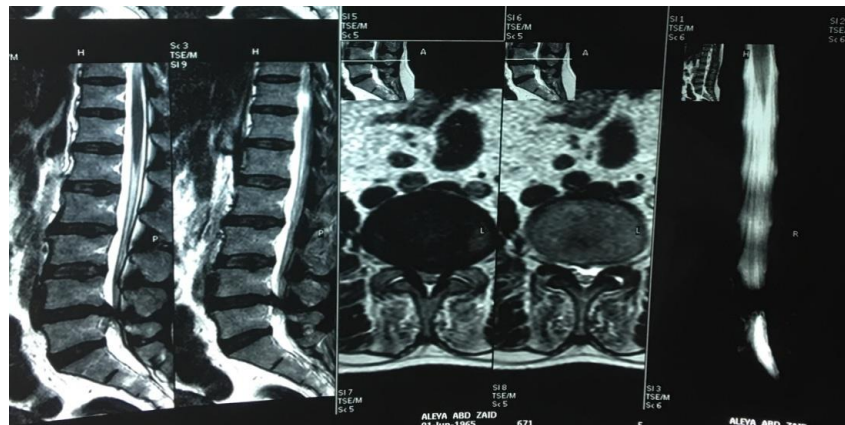


**Fig.2: urinary problem 3 days**

CES can present with different symptoms. These include backache, lower limbs and perineal sensory defect, sciatica, leg muscles weakness and bladder and bowel function disturbance [7] so that clinical diagnosis of CES lacks sensitivity and

specificity with no single symptom or sign adequately predicting management or outcome.[8], [9].

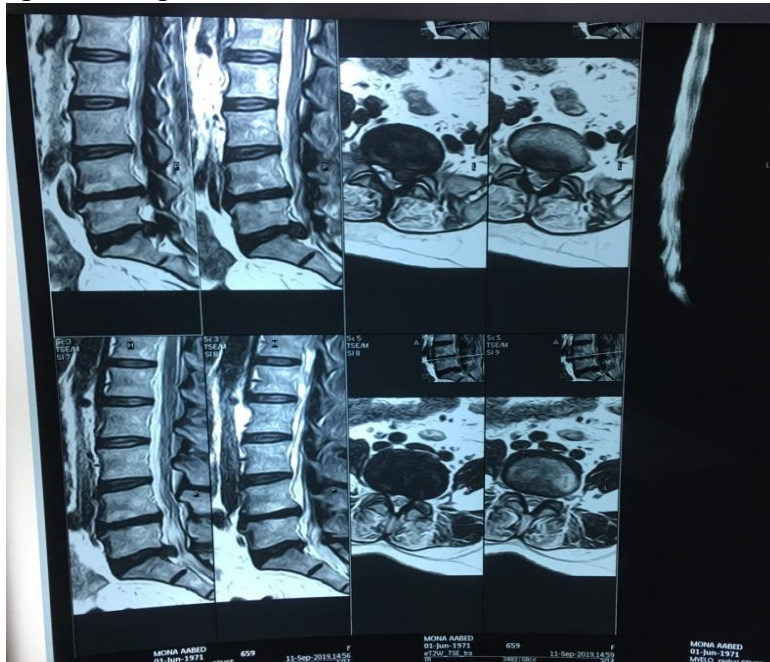
Regardless of exact aetiology and presentation CES once identified, surgical decompression must be done urgently



### **Fig 3. Bladder dysfunction 13 days**

Complications of CES occur when perceived delay in management is take place and there are a variety of opinions regarding the optimum timing for surgery . Most of the studies have been retrospective with a limited number of patients and inconsistent follow up intervals but general agreements that

decompression must done within 48 hour from the time of bladder dysfunction , however, surgery is mandatory regardless the duration as the surgery will improve the quality of the life in a certain levels. Long duration after bladder dysfunction associated with poor outcome .



**Fig 4 : bladder dysfunction 4 days**

#### **Patients and methods:**

Patients with classical pictures of CES were admitted to do surgical decompression with different duration of presentation from the time of bladder dysfunction and urinary complication until time of surgery , the diagnosis was achieved by clinical assessment and confirm by routine plain x ray and MRI. Chart was done to document the signs and symptoms during presentation regarding the power of lower limbs , urinary and bowel complication and saddle anesthesia and duration of illness .

13 patients ( out of 242 cases ) with classical established presentations of CES in form of sever backache with sciatic radiation, motor and sensory impairment , urinary bladder and bowel dysfunction with or without typical saddle anesthesia. They were 11 male and 2 female aging from 19-45 years with range of 32 years with different durations of the illness from the time of bladder and bowel dysfunction until the time of surgery , which can be categorized in 3 groups according to this duration:

**Group A : 58 -96 hours. ( 5 males )**

**Mean age 32y ,**

**Group C: 11-13 days ( 4 males ). Mean age 40 y**

**Group B : 5-7 days ( 2 males ,2 fem**

**) Mean age 30 y**

group	No. of pat.	females	males	Mean age	Duration of illness
A	5	nil	5	32y	58 -96 hours
B	4	2	2	30y	5-7 days
C	4		4	40	11-13 days

All the patients at wheel chair at the time of presentation with urinary catheter.

All the causative factors were herniated lumber disc prolapsed ;

8 cases with L4-5 level and 5 cases with L5-S1 discs

Detailed clinical examination was done at presentation and clinical findings were recorded.

Weaknees of lower limbs were presented in all patients and the motor power was graded as followes :

2 cases with grade I ( flicker of movement) lied in group A.

9 cases with grade II (Movement with gravity eliminated ) from all groups .

2 cases with grade III ( little movements against gravity ) from group C.

Sensations was impaired from buttocks downward , Bladder dysfunction in form of retention with over flow incontinence . bowel dysfunction in form of inability to pass motion in 4 patients all them from group A

Saddle anesthesia ( depend on patient description ) was presented in 7 cases ; 4 in A ,1 in B and 2 in C . and other 6 in variable degree of anesthesia from all groups .

gp	Pat with GI power	Pat with GII power	Pat with GIII power	Bladder dysfunction	Bowel function	Saddle anasth
A	2	3		All+catheter	Loss in 3	4
B	0	3		All+catheter	impaired	1
C	0	3	2	All+catheter	impaired	2

### **Operative technique:**

At knee elbow position with general anesthesia ,mini invasive incision at lumbosacral area and discectomy was done and freeing the nerve roots .

### **Results :**

Evaluation of functional outcomes was based on clinical improvement at 3 postoperative periods :

Early POP: from recovery until 7<sup>th</sup> day where 1<sup>st</sup> postoperative visit

Mid POP: from 8<sup>th</sup> day till end of 1<sup>st</sup> month

Late POP: from end of the 1<sup>st</sup> month to 3 months .

follow up for more than 9 months was continued . clinical improvement based on 3 data

1. Improvement of backache and sciatica
2. improvement of motor function of lower extremities and the patient

able to stand and walking with or without aid and motor power

3. Improvement of bladder and bowel function by controlling the micturition and bowel motion .

The results as follows:

#### Early POP

Pat. group	Backache and sciatica	Motor function	bladder function	Bowel function
A=58 - 96 h	Improvement ++	G =IV standing , walking with aid	Dysfunction With catheter	Controlled ++
B=5-7 days	Improvement ++	G =III cannot stand	Dysfunction With catheter	Un controled
C=11-13 d	Improvement ++	GII	Dysfunction With catheter	Un controled

#### Mid POP:

Pat. group	Backache and sciatica	Motor function	bladder function	Bowel function
A= 58 -96 h	Good+++	G=IV walk without aid	Controlled	Controlled +++
B= 5-7 days	Good+++	G=IV stand , walk with aid	Controlled	Controlled ++
C= 11-13 days	Good+++	GIII cannot stand	Dysfunction With catheter	Un controled

#### Late POP

Pat. group	Backache and sciatica	Motor function	bladder function	Bowel function
A= 58 -96 h	Excellent++++	G=V normal	normall	normal
B= 5-7 days	Excellent++++	G=IV, walk without aid	normal	normal
C= 11-13 days	Excellent++++	GIV stand and walk with aid	Dysfunction on catheter	Controlled++

#### Discussion :

Surgical decompression must be done as soon as possible and any delay will lead to poorer outcome. matter of 6 hour decompression still a more academic than pragmatic issue as the delay in surgery had more than one reasons specially in developing countries and the fear of disability from spine surgery still the main cause as well as the health centers sanitations. the most common delay leads to poor outcome as well as causes for CES are the lumbosacral herniated discs prolapsed and perceiving delay in managements. MRI is the preferred investigation because it visually confirms the diagnosis and establishes the level of disc protrusion [29]. Discectomy is the treatment of choice, but carries a failure rate of 10% to 20%. [10,11].

Root canal stenosis and time of compression of nerve root and it's relation to established CES feature is still not well studied and known yet, for this reasons some literature correlate the outcome with the severity of compression of the root and hence the severity of it's damage rather than the time of decompression. we found that most studies about CES and correlation between outcome and surgery used a small no. of patients as our study and this is due to rarity of CES in spinal procedures, this fact perhaps is the main reason for conflicts and controversy about whether the time of surgery or the severity of compression represent the main outcome factore.

Our study emphasize ; the necessity for urgent decompression in a CES cases as the delay will associated with poor out come and delayed recovery. we found that decompression in < 72 hours associated with excellent outcome. late decompression 4-7 days still associated with good outcome but with delayed recovery and the needs for catheter and bladder exercise. the earliest recovered symptom was the sciatica and backache and the least was the bowel dysfunction.

#### **conclusions :**

CES represent an urgent condition that the decompression is an emergency as the

#### **Recommendations :**

1. Surgery in CES is mandatory regardless the duration of illness.
2. Health programs in social media and TV channels about the syndrome and the benefit of surgery and the success of spinal procedures as this field still represent a point of scare specially in people of developing countries.
3. Because there are many studies depend the severity of the pressure on the nerve root as the main predictor for out come, We think that there is a need for more prospective studies to find the amount of this pressure on the root at nerve root canal and its relation with the beginning of urinary dysfunction using the urgency in urination as a marker or a sign.

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