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Posterior Vertebral Column Resection in Management of Severe Post-traumatic Thoracolumbar Kyphosis

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ABSTRACT

Background Data: Thoracolumbar fractures nowadays are considered the commonest spinal fractures and its treatment remains one of the major controversies. Post-traumatic kyphosis (PTK) is considered the commonest serious complication of poorly managed thoracolumbar fractures which can affect the patient health quality of life. Different corrective osteotomy techniques are described to correct this deformity but with limited correction in sever angular kyphotic deformity. Our hypothesis was, among several osteotomies described to correct kyphosis, vertebral column resection (VCR) provides the highest angle of correction required to manage patients with severe PTK.

Purpose: To evaluate the safety and efficacy of posterior VCR in the treatment of patients with severe degrees of post-traumatic thoracolumbar kyphosis and determine the degree of correction in sagittal imbalance and its relationship with functional outcome of the patients.

Study Design: This prospective clinical case study.

Patients and Methods: Twelve patients suffering from PTK and managed with posterior VCR were recruited for this study. The mean local kyphosis angle (LKA) was 64.1±6.3°. Outcome measures were Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI) and radiological using local kyphosis angle (LKA), global kyphosis (GK), lumbar lordosis (LL) and sagittal vertical axis (SVA). The mean follow up time was 13.5±2 months.

Results: The mean LKA and SVA score improved from 64.1± 6.3° and 52.6±8.3mm preoperatively to 8.8±3.4° and 13.1±4.8mm postoperatively, respectively. All were statistically significant. Functionally, the VAS score of back pain significantly reduced from 6.8±0.9 to 1.7±0.8 and the Oswestry Disability Index significantly improved from 59.8±7.5 to 11.6±3.4. No major complications were reported apart from intraoperative dural tear in 2 patients, superficial infection in one patient, deep infection in one patient and temporary paraparesis in one patient.

Conclusion: Posterior VCR can provide satisfactory correction in severe PTK and improvement in functional outcome with appropriate application and fine surgical technique. (2018ESJ165)

Keywords: post-traumatic kyphosis; vertebral column resection; vertebral osteotomy; thoracolumbar Fracture

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INTRODUCTION

Thoracolumbar fractures nowadays are considered the commonest spinal fractures and its treatment remains a major controversy.[5,14] Poorly managed thoracolumbar fractures can develop serious problems, of which, post-traumatic kyphosis (PTK) is considered the commonest serious sequel.[6] PTK can lead to different pathological changes as stenosis of the spinal canal with the development of neurological insult, spinal instability and disc degeneration. Sagittal spinal imbalance, developed in adult deformity patients, had been proven to affect the patient health quality of life and patients usually suffer from varying symptoms including back pain, focal deformity and neurological deterioration.[16,22]

The treatment of PTK is challenging. Surgical treatment is indicated in patients with refractory back pain or deteriorating neurological status, with a sagittal index of 20 degrees being the cutoff value for surgical intervention.[6,21]

Since 1945, several surgical procedures have been described for the correction of the thoracolumbar kyphosis. Among different osteotomy options, vertebral column resection (VCR) provides the highest angle of correction. VCR can be done using either combined anterior and posterior approaches or posterior-only approach (PVCR).[16] PVCR was described in detail by Suk et al,[18] for the correction of severe fixed spinal deformity and he concluded that PVCR is effective in correcting deformity with the ability to reconstruct the anterior column with less complications than the conventional anterior-posterior VCR.

The aim of this study was to evaluate the safety and efficacy of PVCR in the treatment of patients with severe degrees of post-traumatic thoracolumbar kyphosis and determine the degree of correction in sagittal imbalance and its relationship with functional outcome of the patients.

PATIENTS AND METHODS

Twelve patients, 8 males (66.7%) and 4 females (33.3%), with PTK of thoracolumbar junction were enrolled in this prospective study from April 2013 till August 2016 (Figure 1). Patients were included if they were complaining from back pain affecting their quality of life (Oswestry Disability Index (ODI) ≥40, VAS for back pain ≥5), neurological symptoms, local kyphotic deformity ≥ 50° and positive sagittal imbalance (SVA≥25mm) on whole spine long standing X-ray films. The resected vertebra was D11 (2 patients), D12 (6 patients), L1 (3 patients) and L2 in one patient. The mean age of the patients was 27.8±6.6 years (Range, 18–43 years). The main complaint of our patients was back pain and local deformity with neurological complaints in lower limbs of five patients (41.6%), in the form of progressive tingling and numbness without motor or sphincteric symptoms (Table 1). On examination, these patients had hyperreflexia in both lower limbs without motor weakness. The pain was measured using the visual analogue scale (VAS) with a scale from 0 to 10 (0 means no pain while 10 is a maximum pain). The mean preoperative VAS was 6.9±0.9 (Range, 5-8). The functional outcome was measured using the Oswestry Disability Index (ODI), which was 59.8±7.5 (Range, 48-72) preoperatively.

After a thorough clinical examination of all patients, a whole spine standing X-ray was ordered for the patient to measure local kyphotic angle (LKA), global thoracic kyphosis (GK) from T5 to T12, lumbar lordosis angle (LL) and sagittal vertical axis (SVA). All these measures were done using the Surgimap™ (version: 2.2.13) computer program. The mean preoperative LKA was 64.1±6.3° (Range, 55.3-75.2°), the mean preoperative GK was 78.2±3.5° (Range, 72.3-83.5°), the mean preoperative LL was 56.1±4.3° (Range, 50.2-63.5°), the mean preoperative SVA was 52.6±8.3 mm (Range, 39.8–64.8 mm) (Table 1). CT may be needed for better evaluation of the deformity and MRI was done to assess the condition of the neural structures.

Surgical Technique:

Preoperative Preparation: Standard preoperative evaluation was done for all patients and at least 2 units of fresh examined blood with fresh frozen plasma were prepared for all patients. Intravenous antibiotic 2 hours preoperatively was administrated to our patients and continued for 3 days postoperatively then shifted on oral antibiotic for the next 7 days.

Operative Procedures: Under general anesthesia with endotracheal intubation, all patients were properly placed in prone position on the operating table. A straight posterior midline approach was done. As massive bleeding is considered one of the main problems during PVCR, it is essential to minimize blood loss by careful subperiosteal dissection of the posterior elements and using controlled hypotensive anesthesia. Following the exposure of the uppermost and the lowest vertebrae involved in the fusion till the tips of transverse processes, the dissection was then carried out laterally, exposing the ribs corresponding to the level of the vertebral column resection (if it is a thoracic level).

Inferior facetectomy with the removal of articular cartilage (to facilitate correction and posterior arthrodesis) was followed by application of pedicle screws with free hand technique at the pre-planned levels. A minimum of three levels above and below the site of vertebral resection should be fixed. At this point, a temporary rod contoured to the shape of the deformity was applied and fixed to one side of the construct.

Vertebral Column Resection: The posterior elements were resected including the laminae till the pedicles above and below the resection that usually resulted in 5 to 6 cm resection of the posterior elements that allowed to access to the spinal cord and to prevent dural buckling or impingement. The transverse process was excised (at the side opposite to the temporary rod) in order to expose the lateral wall of the pedicle. In the dorsal spine, we removed at least 4 to 5 cm of the medial ribs. The ribs were removed by cutting each laterally and then disarticulating the costovertebral joints. The corresponding nerve roots were then identified and scarified medial to the dorsal root ganglion (only in the dorsal spine) to facilitate the resection.

Meticulous subperiosteal dissection, avoiding injury to segmental vessels, was performed for exposure of the lateral wall of the vertebral body. If segmental vessels were injured during dissection, the bleeding controlled by electric cauterization. Under visual control, the pedicles and the lateral portion of the vertebral body were removed with small osteotome. The vertebral body and the intervening discs were removed in a piecemeal fashion gradually towards the medial side and over to the other half of the vertebral body through the void created in the vertebral body, keeping a thin shell of bony posterior vertebral wall beneath the dural tube. The anterior walls were also removed in a piecemeal fashion, taking care to leave the soft tissue tube anterior to the vertebral bodies intact. When an adequate amount of vertebral body was removed, the visible posterior vertebral wall lateral to the dural tube could be removed.

Following the resection of the posterior wall on the working side, another temporary rod, contoured to the shape of the deformity had been inserted to the opposite side and was securely locked to the screws. Then the rod on the other side was removed to allow resection on that side. The same procedure was carried out on the opposite side. This was followed by the final check that the canal is clear of any residual compression at the resection margins and redundant bony or disc tissue attached to the anterior side of the dura that might hinder free and untethered movement of the dural tube.

A pre-filled titanium mesh cage with autologous bone graft from the removed bone was applied from the side without the rod. Sometime loosening of the screw nuts or application of a straighter temporary rod was done to facilitate the application of the mesh cage. The cages were placed anteriorly to act as a hinge of the deformity correction and prevent their posterior dislodgement during correction. The deformity was corrected by extension of the operating table and a permanent rod was applied after proper contouring, then the temporary rod on the other side was replaced by another contoured rod.

The spinal cord had been assessed under direct vision and with probing each time a correction maneuver was completed to ensure that there is no compression of the spinal cord or the nerve roots. The final correction was then checked by C-Arm. Posterior arthrodesis was carried out at all instrumented level by the application of bone graft. Closed suction drain had been placed and the wound was closed in layers.

Postoperative Care:

Postoperative thoraco-lumbo-sacral orthosis (TLSO) was used in all patients for three weeks and then they were advised to remove it for better soft tissue healing. The suction drain was removed after about 2 days and the patient were advised to begin walking inside the hospital. The patients were discharged after 4 to 5 days postoperatively after a hemoglobin concentration was checked and corrected by packed RBCs if needed.

Follow up X-ray was done immediately postoperatively, 6 weeks, 12 weeks and then every 3 months postoperatively. Postoperative assessment was done as preoperative using the same measures. All patients were followed for at least 12 months.

Statistical Analysis:

Continuous variables were expressed as the Mean±SD (Range). The categorical variables were expressed as a number (percentage). Continuous variables were checked for normality by using Shapiro-Wilk test. Data found to be normally distributed were analyzed using the paired t-test for dependent two repeated measures. Possible association between clinical outcomes measurements and degree of SVA were investigated by calculating correlation coefficients. The P-value <0.05 was considered significant. All statistics were performed using SPSS 23.0 for windows (SPSS Inc., Chicago, IL, USA).

RESULTS

Local kyphotic deformity and sagittal imbalance were corrected in all our patients. This was judged by the local kyphotic angle which was 64.1±6.3° (Range, 55.3-75.2°) and improved to 8.8±3.4° (Range, 2.9-15.6°) (Figure 2) and the correction in the sagittal vertical axis from 52.6±8.3 (Range, 39.8–64.8) mm to 13.1±4.8 (Range, 5.2–19.9) mm (Figure 3,4; Table 2)

No major complications happened intraoperatively in the form of death, visceral or vascular injury, massive bleeding or blood transfusion as the mean blood loss was 781.8±211.3 (Range, 550–1100) ml. Two patients with dural tears (16.6%) were encountered which were sutured intraoperatively with no postoperative leak. The mean operative time was 256.8±49.6 (Range, 190–340) min (Table 3)

All patients except one recovered from the operation with no neurological deterioration with complete recovery of the five patients who had preoperative neurological complaints. One patient suffered temporary paraparesis (ASIA score D) and he regained his full power after six months of physiotherapy. The wounds healed well except for two patients (16.6%), where wound infection occurred. One patient showed superficial wound infection and he was treated by intravenous antibiotics and repeated wound care. The other patient, which had two previous surgeries before the osteotomy operation, showed deep wound infection 10 days after surgery. This patient was admitted to the hospital and surgical debridement of the wound was done with application of local Vancomycin powder and tight closure of the wound. Culture and sensitivity of the wound debridement materials was ordered, and antibiotic was given for two weeks according to it.

The mean follow up period of our patients was 13.5±2 (Range, 12–18) months. There was a significant improvement in the back pain of the patient, as shown in the improvement in VAS from 6.8±0.9 (Range, 5–8) preoperatively to 1.7±0.8 (Range, 0–3) at final follow up (P<0.05).

Also, this was obvious in the improvement in the function outcome of the patient, as shown in changes in mean ODI changes from 59.8±7.5 (Range, 48–72%) preoperatively to a final mean of 11.6±3.4 (Range, 6–18%) (P<0.05) (Figure 5, Table 2). A Spearman's rank-order correlation was done to determine the relationship between functional outcomes and the degree of SVA deviation, but it failed to show correlation between them, which was statistically insignificant (r_s(VAS)=0.331, P=0.293) (r_s(ODI)=0.032, P=0.922).

Table 1. Patient's Demographic and Clinical Data

Parameters		Studied Group (N=12)	
Age (years)	Mean±SD	27.8±6.6	
	Median (Range)	27.5 (18-43)	
Sex	Male	8	66.7 %
	Female	4	33.3 %
Resected Vertebra	T11 T12	2 6	16.7 % 50.0 %
	L1	3	25.0 %
	L2	1	8.30 %
Neurological Complaint	Without	7	58.4 %
	With	5	41.6 %

(Qualitative data are expressed as number & percent (%).)

Table 2. Reported Outcome Parameters in Study Patients.

Parameters	Preoperative (N=12)	Final (N=12)	t	P
LKA	64.1±6.3° (55.3-75.2°)	8.8±3.4° (2.9-15.6°)	25.346[a]	<0.001
SVA	52.6±8.3 (39.8–64.8) mm	13.1±4.8 (5.2-19.9) mm	15.078[a]	<0.001
ODI %	59.8±7.5 (48–72)	11.6±3.4 (6-18)	29.344[a]	<0.001
VAS	6.8±0.9 (5–8)	1.7±0.8 (0-3)	26.339[a]	<0.001

(a Paired t-test)

Table 3. Patient Characteristics and Surgical Outcome

Patient	LK_pre	LK_final	correct_%	GK_pre	GK_ final	SVA_pre (mm)	SVA_final (mm)	LL_pre	LL_ final	VAS_pre	VAS_ final	ODI_pre	ODI_final	op_time	bl loss
1	55.3	5.4	90.2	81.9	38.7	62.9	12.9	50.2	48.5	7	1	58	12	280	550
2	72.4	2.9	95.9	79.3	39.6	45.6	13.5	63.5	59.7	7	2	70	18	220	550
3	59.1	7.8	86.8	75.9	34.2	56.8	17.4	52.4	49.3	6	1	54	8	310	500
4	65.6	15.6	76.2	80.1	47.8	49.1	5.9	53.7	50.8	8	3	48	6	215	700
5	75.2	6.5	91.3	82.5	35.9	39.8	19.1	60.9	58.4	6	2	54	10	340	750
6	70.8	12.3	82.6	78.9	34.8	48.1	12.3	59.3	58.2	7	3	58	12	300	1100
7	62.3	9.2	85.2	83.5	30.8	53.6	16.5	60.4	56.7	7	2	62	14	240	750
8	58.1	8.7	85	78.4	30.9	47.9	5.2	52.3	50.1	6	1	68	8	290	1000
9	63.5	10.2	83.9	75.9	37.6	64.8	8.9	55.6	51.3	8	2	72	16	190	700
10	68.3	7.6	88.8	73.4	32.8	58.9	15.4	57.2	52.7	5	0	52	12	240	1000
11	58.9	12.7	78.4	76.8	29.8	42.9	10.8	50.6	47.9	7	2	64	14	200	1000
12	60.4	7.8	87	72.3	23.4	61.9	19.9	57.3	50.6	8	2	58	10	195	650
Mean	64.1	8.8	85.9	78.2	34.6	52.6	13.1	56.1	52.8	6.7	1.7	59.8	11.6	256.8	781.8
SD	6.3	3.4	5.4	3.5	6.0	8.3	4.8	4.3	4.2	0.9	0.8	7.5	3.4	49.6	211.3

LK_pre: preoperative local kyphosis angle, LK_final: final local kyphosis angle, GK_pre: preoperative global kyphosis, GK_final: final global kyphosis, SVA_pre: preoperative sagittal vertical axis, SVA_final: final sagittal vertical axis, LL_pre: preoperative lumbar lordosis, LL_final: final lumbar lordosis, ODI_pre: preoperative Oswestry Disability Index, ODI_final: final Oswestry Disability Index, op time: operative time, bl loss: blood loss, SD: standard deviation.

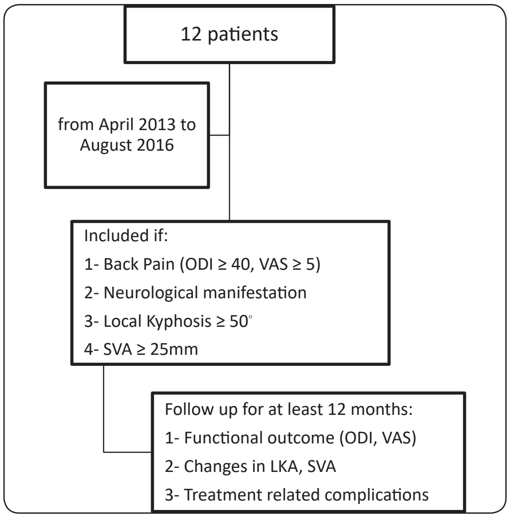

Figure 1. Flow chart shows the study design and its time frame.

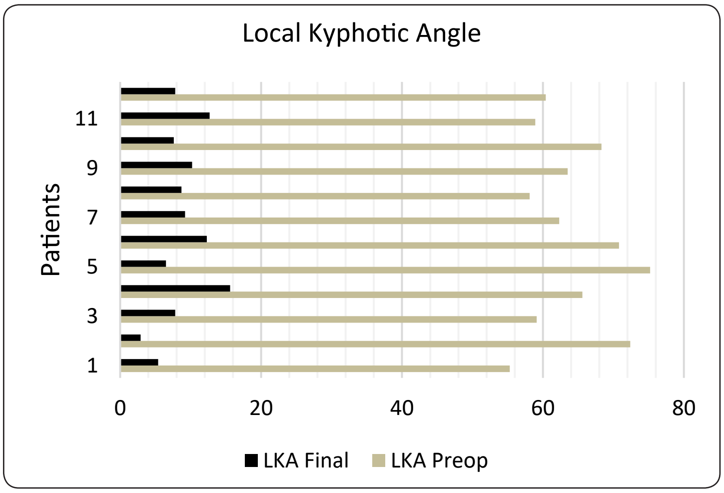

Figure 2. Correction in the local kyphotic angle deformity.)LKA Final indicates final local kyphotic angle, LKA Preop indicates the preoperative local kyphotic angle).

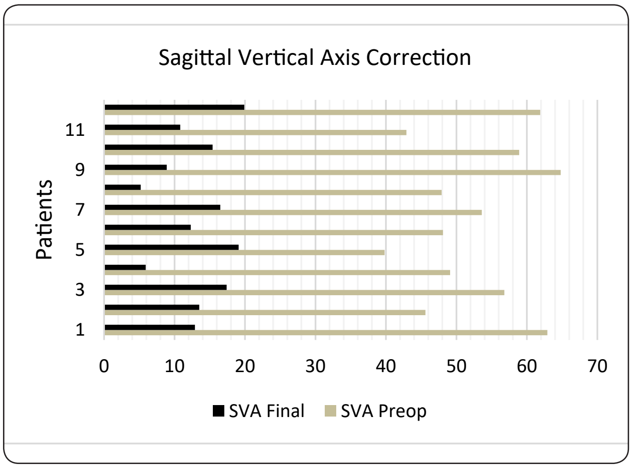

Figure 3. Correction in the sagittal vertical axis. (SVA Final indicates final sagittal vertical axis, SVA Preop indicates the preoperative sagittal vertical axis).

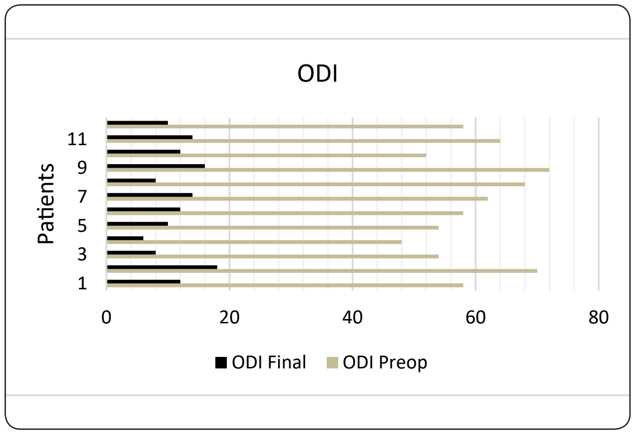

Figure 5. Correction in the Oswestry Disability Index. (ODI Final indicates final Oswestry Disability Index, ODI Preop indicates the preoperative Oswestry Disability Index).

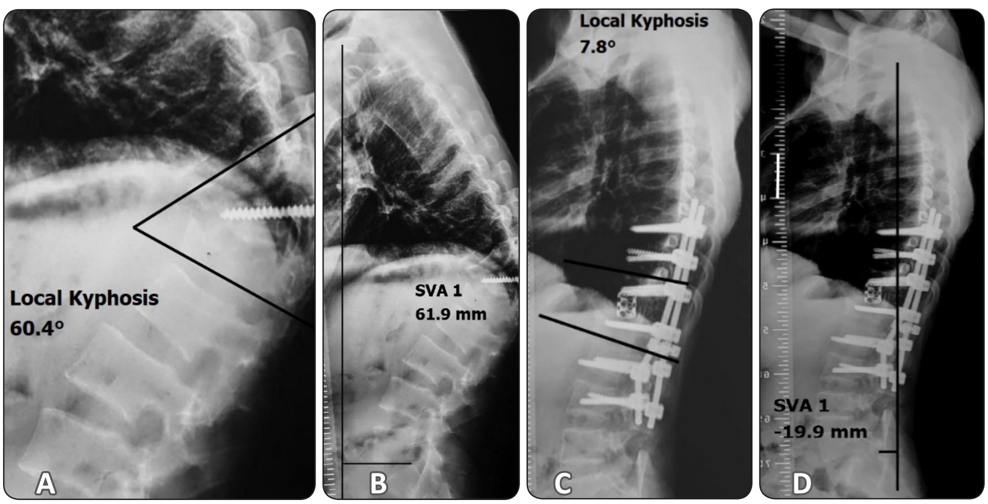

Figure 4. Patient No., 12, 37-year-old male with post-traumatic kyphosis at T12. (A) Preoperative lateral radiographs show the local kyphotic deformity 60.4°. (B) Preoperative sagittal imbalance of 61.9mm. (C) Postoperative local kyphotic angle correction to 7.8°. (D) Postoperative sagittal vertical axis correction to 19.9mm.

DISCUSSION

Thoracolumbar fractures nowadays are considered the commonest fractures in the spine due to the increase of motor car accidents. Different ways of treatment are present ranging from conservative measures till surgical management. One of the main goals of treatment is correction and preservation of the local deformity occurred till healing of the fracture.[9,8] Late PTK is considered a major complication of the poorly managed thoracolumbar fracture which can lead to progressive deformity, neurological deficit and intolerable back pain. This refractory back pain is usually due to fracture non-union, compensatory hyperlordosis and from the muscle fatigue due to the sagittal imbalance developed in severe patients[10]. It has been estimated that the cutoff of the surgical management is the presence of more than 20° focal kyphosis which is important with other determinant in the patients.[1,6]

Spinal osteotomies are now one of the cornerstones of spinal deformity operations. There are many types of spinal osteotomies which are used in deformity correction depending on the degree kyphosis, bone quality and type of the deformity. SPO was first performed for the treatment of kyphotic deformity by resecting of the posterior elements of the vertebra in 1945.[10] One single SPO is expected to correct about 10-15°, which is difficult to achieve satisfactory outcomes for the sharp kyphosis in thoracic or lumbar spine.[4,10]

Pedicle subtraction osteotomy (PSO) is mostly recommended as the surgical procedure for the treatment of sagittal imbalance from a kyphotic deformity.[11] PSO correction is limited to 30-40° which can be insufficient in severe rigid deformities and the potential of neurological affection increases if more correction is performed from spinal cord shortening and distortion. This limitation can be exceed by either to do multiple PSO or perform a posterior vertebral column resection (PVCR) to correct this severe angular deformity.[3,11,15] A modified PSO had provided an alternative method to correct kyphotic deformity in patients with post-traumatic thoracolumbar kyphosis with satisfactory results when compared to the classic one.[2,6,19] The limitation of that is sometimes the difficulty of obtaining good correction from a collapsed fractured vertebra when compared to anterior column lengthening procedures.[3,22]

Vertebral column resection (VCR) that involves complete resection of one or more spinal segments, is considered one of the most challenging spinal procedures. It can be done using either combined anterior and posterior approaches or only a posterior approach. Posterior vertebral column resection (PVCR) was firstly reported by Suk et al,[18] in 2002 for the treatment of the severe spinal deformities, when he used it in rigid severe spinal deformities where conventional correction methods are usually unsatisfactory; therefore, a more aggressive approach is necessary. PVCR is preferred over combined anterior and posterior VCR as it is a single procedure reducing the total operative time and the amount of blood loss, in addition, it avoids the morbidity of the anterior approach. PVCR provides a greater amount of correction than all other types of spinal osteotomies and allows translational and rotational correction of the vertebral column, but it is much more aggressive due to its more complicated mechanisms, higher technical difficulties and increased technical demands.[13,21]

Twelve patients with posttraumatic kyphosis, with a mean local angle of 64.1±6.3° (Range, 55.3-75.2°), were included in our study with a mean follow up period of 13.5±2 (Range, 12–18) months. All the patients were treated with PVCR of the kyphotic vertebra. The mean operative time was 256.8±49.6 (Range, 190–340) min and the mean blood loss was 781.8±211.3 (Range, 550–1100) ml, which were comparable to other studies.[21,20] Wang et al,[21] managed 23 patients with PTK by PVCR. The mean LKA was 47.0±5.7°, which was less than that in our study. The mean operative time was 156.3±32.9 minutes and the mean blood loss was 806.5±174.5 ml. In the study of Wafa and Elbadrawi,[20] there were 40 patients with rigid kyphotic deformity managed with PVCR, the mean operative time was 249 minutes and the mean blood loss was 850 ml. However, only 8 patients with PTK were included in their study. Limited number of our patients was due to the selection of the severe degree of the PTK patients with mean LKA >50°.

The mean SVA significantly improved from 52.6±8.3 to 13.1±4.8 mm with a significant improvement of the mean LKA from 64.1±6.3° to 8.8±3.4° in this study. Schwab et al,[16] found that a SVA deviated by more than 47 mm in adult spinal deformity had a low functional outcome. It had been proven that sagittal imbalance is directly correlated with poor health-related quality of life (HRQoL) in adults with significant changes in the ODI of the patients.[7] This was not the patient in our study as there was insignificant correlation between the SVA and ODI in our patients. This may be due to the small number of our study group and short period of the complaint.

Back pain improved in all patients. The mean preoperative VAS improved from 6.8±0.9 preoperatively to 1.7±0.8 at final follow up, which was comparable to the study of Wang et al,[21] the mean VAS of pain improved from 7 to 1.8 at the final follow up. Suk et al,[17] showed that the preoperative pain improved by more than 50% at the final follow up. Arif et al,[1]functional outcome and complications of single-stage vertebral column resection in patients with kyphotic deformity. METHODS The prospective case series was conducted at Hayatabad Medical Complex, Peshawar, and Aman Hospital, Peshawar, from January 2012 to December 2013, and comprised all patients who underwent single-stage posterior vertebral column resection. Only patients with severe rigid sharp deformity of different aetiology that required more than 40 degree correction and who had at least 3-month follow-up were included. Data was processed using SPSS 16. RESULTS Of the total 18 patients, 11(61.1% reported improvement of the VAS from 6.88±0.83 to 2.83±0.70 in their study group.

Neurological injury is one of the major problems during PVCR operation. Insertion of the pedicle screws, higher or excessive lower tension on the spinal cord, morphological character and degree of the curve, segmental arteries injury, site and number of resected vertebrae are considered risk factors for neurological injury in osteotomy patients. In the process of deformity correction by spinal osteotomy, one of the key procedures of neurological protection is to control the translation of the resected spinal ends and to maintain the cord in a moderate lower tension. During PVCR, a temporary rod should be used to protect and control the resected ends translation and the corrective process should be based on in situ bending and rod exchange techniques. In addition, the tension of spinal cord is often increased following corrective procedure, that can be decreased effectively by repeated spinal shortening and compression.[10,17]

In our study, complications occurred in 5 patients in the form of dural tears in two patients that discovered and managed intraoperatively. Four out of the five patients who had preoperative neurological complaints had postoperative complete recovery, while the fifth one had postoperative paraparesis grade D according to American Spinal Injury Association (ASIA) and had complete recovery after 8 months of physiotherapy. The wounds healed well except for two patients (16.6%), where wound infection occurred. One patient suffered superficial wound infection which was treated by intravenous antibiotics and repeated wound care. The other patient, which had two previous surgeries before the osteotomy operation, showed deep wound infection 10 days after surgery. The patient was admitted to the hospital and surgical debridement of the wound was done with application of local Vancomycin powder and tight closure of the wound. Culture and sensitivity of the wound debridement materials was ordered, and antibiotic was given for two weeks according to it.

Wound related complications and neurological insults were the commonest complications in other related studies. In the study of Wafa and Elbadrawi,[20] reported complications in 6 patients in the form of superficial wound infection in 4 patients and pseudarthrosis in 2 patients. In another study[12] only one patient suffered from paraparesis after surgery that resolved completely within 6 months. Suk et al,[17] reported complications in 24 patients (out of 143 patients with spinal deformities) in the form of: two complete cord injuries, six hematomas, four root injuries, five fixation failures, two infections and five hemopneumothorax.

This study has some limitations, in the form of small number of patients, which may be solved by conducting a multicenter study. Also, comparing the outcome in this study with a control group, which may be treated with other type of osteotomy for example PSO, may support our results. To clarify the role of correcting the spinopelvic parameters in improvement of HRQOL in PTK, more studies must be done to compare the degree of correction in these parameters and its affection on the functional outcome and the quality of life of the patients.

CONCLUSION

Sagittal spinal imbalance is one of the major problems of patients with PTK, which affects the health-related quality of life. The complications of this procedure are its major drawback even in the hands of expert surgeons. Posterior VCR can provide satisfactory correction in severe PTK and improvement in functional outcome with appropriate application and fine surgical technique.

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الملخص العربى

علاج التحدب شديد الدرجة للفقرات الصدرية القطنية الناتج عن كسورها بواسطة الاستئصال الفقاري من الخلف

البيانات الخلفية: كسور الفقرات الصدرية القطنية هو اكثر كسور العمود الفقري شيوعا ولا زال علاج هذه الكسور مثار للجدل. يعد التحدب الناتج عن هذه الاصابة هو أخطر المضاعفات التي قد تنتج عن علاج كسور الفقرات الصدرية الثقطنية بشكل غير صحيح مما قد يؤثر على الحياة اليومية للمريض. يتم علاج التحدب جراحيا بواسطة عمل شق عظمي بالفقرة المكسورة وهناك عدة طرق لعمل الشق العظمي، و يعتبر الاستئصال الفقاري من الخلف هو إحدى هذه الطرق و التي بدأ استخدامه في علاج حالات التحدب و الجنف الخلقي الشديدة.

الغرض: تقييم فاعلية الاستئصال الفقاري من الخلف لعلاج التحدب شديد الدرجة للفقرات الصدرية القطنية الناتج عن كسورها و علاقتها بالحياة اليومية للمرضى.

تصميم الدراسة: هذا البحث هو دراسه لحالات أكلينيكية أجريت على اثني عشر مريضا و تم تقييم المرضى باستخدام مقاييس لمقارنة الالم و الاعصاب الحركية و الحسية و درجة التحدب قبل و بعد اجراء الجراحة.

المرضى و الطرق: نتناول في هذا البحث علاج اثني عشر مريضا يعاني من تحدب بالفقرات الصدرية القطنية أكثر من 55 درجة ناتج عن كسور العمود الفقري بواسطة الاستئصال الفقاري من الخلف و تم متابعتهم لفترة من 12-18 شهر.

النتائج: كان هناك تحسن كبير في الم الظهر و كذلك في قياس درجة التحدب من متوسط 64.1±6.3 درجة الى 8.8±3.4 درجه قبل و بعد اجراء الجراحة بالترتيب. تحسنت حالة الاعصاب بعد الجراحة في جميع المرضي سوي مريض واحد عانى من ضعف بالطرفين السفليين ولكنه استعاد الحالة الطبيعية بعد 6 شهور.

الاستنتاج: يتضح من هذه الدراسة أن النتائج السريرية والإشعاعية للاستئصال الفقاري من الخلف هي نتائج مُرضية في علاج التحدب الشديد للفقرات الصدرية القطنية الناتج عن كسورها ولا يحدث معه مضاعفات خطيرة مما يحسن من مقايس الألم و نشاط الحياة اليومية للمرضى.