LATERAL EXTRA CAVITARY APPROACH TO PARASPINAL LESIONS*

Kemal YÜCESOY MD* Tansu MERTOL MD* Berkant ATAY MD*
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ABSTRACT:

Precise knowledge of localization, size, histopathological features, and involved anatomical structures are important while planning the approach to lesions of thoracic or lumbar regions. In lesions affecting the vertebral body and exerting ventral compression to the spinal cord, an anterior approach is preferred, while a posterior approach is considered for treatment of lesions located in the posterior structures of the vertebrae and compressing the cord posteriorly. Combined posterior and anterior approaches to lesions compressing the cord laterally or expanding in between the natural compartments carry the disadvantages of both a prolonged time of surgery and increased morbidity rates. The extended posterior approach which is becoming popular and widely accepted for this kind of lesions is discussed with presentation of two cases. The first case is a patient who had an aneurysmal bone cyst extending into paraspinal structures unilaterally, and the other one is a patient with a mesenchymal sarcoma, who were both operated using a lateral extra-cavitary route to remove the lesions extending to the vertebral body and stabilized by posterior instrumentation though a posterior approach.

Key words: *Paraspinal lesions, thoracic and lumbar spine, anterior approach, posterior approach, lateral extra-cavitary approach.*

INTRODUCTION

The standard anterior or posterior approaches cannot provide adequate field of view for thoracolumbar tumors involving the intraspinal and paraspinal tissue, upper thoracic paraspinal tumors, tumors in the lumbar region extending into the psoas muscle, and anteroposteriorly lying one-sided tumors (2, 7, 9). Some of the tumors usually causing a transcompartmental leap via intervertebral foramina are neurogenic tumors like schwannoma, neurofibroma, neuroblastoma, tumors of the visceral organs around the anterior paraspinal region like lung and kidneys which are extending into the spinal canal, primary paraspinal sarcoma, hematopoietic neoplasms and thoracic meningocele (2, 7, 8, 9, 10). The lateral extra-cavitary approach not only provides an exclusively wide angle of view within a single undertaking, but it also allows anterior bone grafting and posterior instrumentation at the same time (7, 9).

Operative technique

For this approach, the patient is placed in a three quater prone or prone (1) and a hockey-stick incision is made. The opening is extended to see the facet joints in the lateral, the ribs in the thoracic, psoas and quadratus lumbarum in the lumbar region. The angle of view can be enlarged by excision of 6-8 cm of ribs and transverse processes in the thoracic region, keeping in mind that shorter rib excisions may cause flail chest. During the opening procedure, the tumor extent and intercostal neurovascular bundle is discriminated and the ventral part of the pleura is dissected away to obtain the anterior exposure. Firstly the ventral dura, and -when the vertebral body is resected- the lateral dura is released. An anterior strut graft is placed in the vertebrectomy defect and posterior instrumentation is carried out finally (2, 7, 9). Mc Cormick (7) defined the four types of these tumors and detailed surgical principles are uncovered by others.

CASE 1:

A thirteen year old female presented with back pain for one year and progressing paraparesis for three days. The neurological examination revealed a paraparesis of about 3/5 especially worse in the distal muscle groups without the pyramidal signs and sphincter dysfunction, which raised a suspicion of lumbar disease. The anteroposterior and lateral

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lumbosacral vertebra x-ray, and lumbar CT (L3-4, L4-5, L5-S1) was ordered as preliminary studies. CT was quite normal which excluded the diagnosis of a herniated lumbar disk, but the x-ray showed the destruction of posterior elements of Th12 vertebra and lead to a low thoracic neoplastic disorder. MRI scans of thoracolumbar region was obtained to clarify the extent of destruction and neurological insult. This study revealed a mass lesion severely compressing the spinal cord posteriorly and extending to the 1/3 posterior part of the vertebral body via the left pedicle.

The patient was taken immediately to operation, and a thoracolumbar median vertical incision was carried out after which the paraspinal fascia and muscles were cut with the cautery and stripped from underlying bony structures and pulled away laterally as far as the transverse processes were seen on both sides. Up to this stage of the operation, no pathological evidence except the enlargement of the laminae of the Th12 vertebra was observed. When a small opening on the surface of the lamina was enlarged, a mass resembling an organized hematoma was seen. The pathological bony structures and hematoma were removed using suction, Kerrison rongeurs, and curettes. During this process, the lesion extending through the left pedicle and invading the vertebral body was excised totally. After hemostasis, posterior stabilization was maintained using the Alıcı-4 system and the vertebral bodies involved were fused with the bone grafts obtained from the right iliac crest. A rapid and significant regression of neurological symptoms and findings occured after the operation, and control X-ray studies showed no signs of dysfunction or disconfiguration of posterior instrumentation (Fig. 1, 2). The patient was ambulated on the first day of operation and charged out with left knee extension 4+/5, bilateral foot dorsiflexion 3/5, toe flexion 1/5 and plantar flexion 3/5 in the pre-charge neuro exam, and no adjuvant therapy was instituted after the diagnosis was proved to be a simple aneurysmal bone cyst.

At the postoperative 3rd month control, the patient was found to have no neurological findings, and control CT scan was quite normal except the postoperative changes (Fig. 3). The patient was appointed for timely controls.

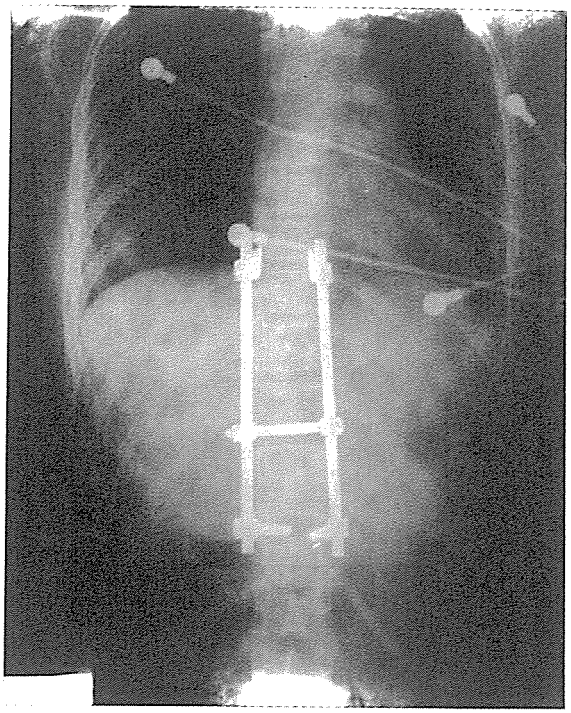


Figure 1.

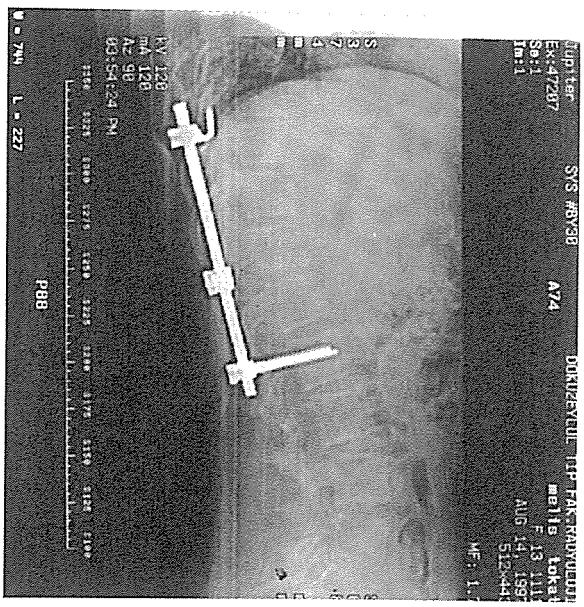


Figure 2.

CASE 2:

A female aged 25, who was operated three years ago for an extradural mass lesion at Th11 level and given no adjuvant therapy afterwards as the pathological examination of the tumor was reported to

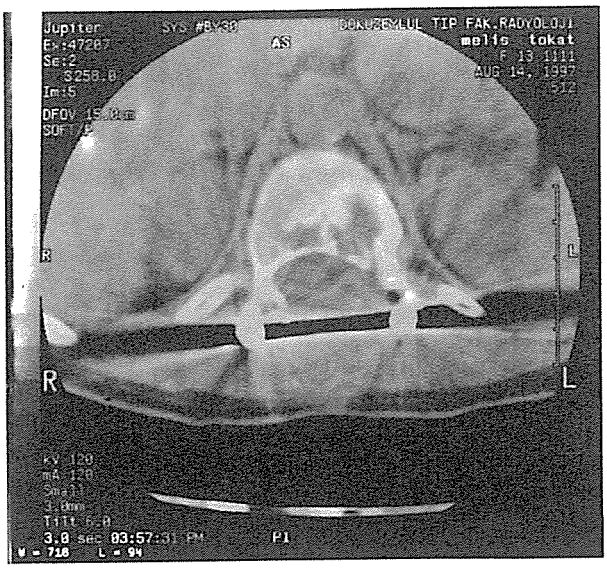
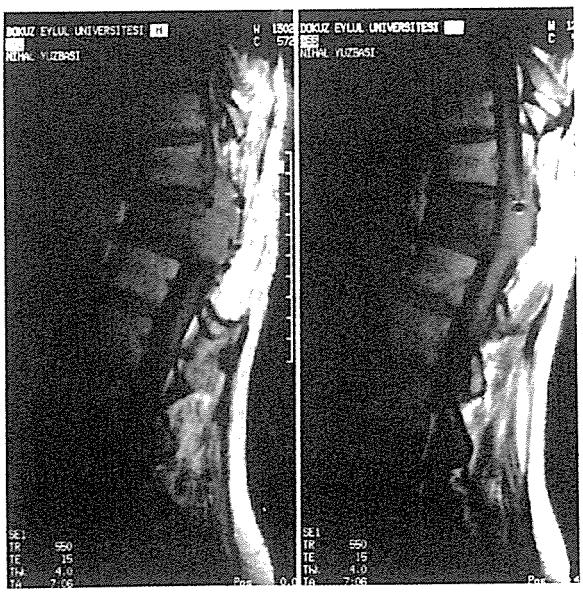


Figure 3.

be a schwannoma, was admitted with symptoms of severe leg and back pain after a fall two days ago. The neurological examination revealed a paraparesis of 2/5 on the right and 3/5 on the left, and hypoesthesia prominent on the right side below the level of L1 dermatome. The MRI study of the thoracolumbar region yielded a tumor, stemmed from the old operation site about Th11, which compressed the spinal cord from posterolateral on the right side and invaded the left posterolateral part of the vertebral body (Fig. 4, 5).

The patient was operated with a thoracolumbar vertical skin incision after which the paravertebral fascia and muscles were dissected away with cutting cautery. The lesion was found to be extending from paravertebral soft tissue through the right lamina and zygoapophyseal joint into the right pedicle and right part of the vertebral body and even to the transverse process and rib on the same side. The frozen section study of the tumor sample peroperatively was reported as malignant and the tumor was resected totally. The stabilization is maintained by a posteriorly applied Alıcı-4 system. Anterior fusion was not performed since destruction seemed to occur in the posterior third of the vertebral body. Postoperative control X-ray confirmed the stabilization and showed no other pathological findings (Fig. 6, 7). The patient was charged out one week after the operation.

The histopathological study of the tumor revealed a mesenchymal sarcoma; the prior sections of the sample obtained 3 years ago were studied again and we were informed that a mistake had occurred, and the diagnosis at that operation was indeed the same sarcomatous tumor. The adjuvant treatment consisting



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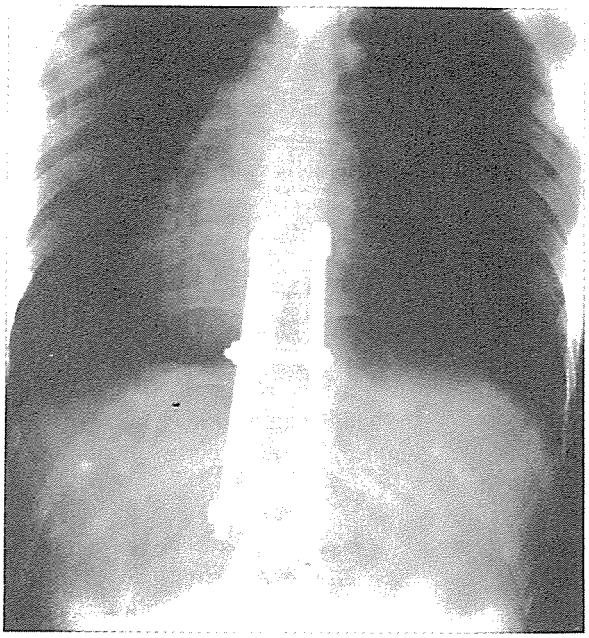

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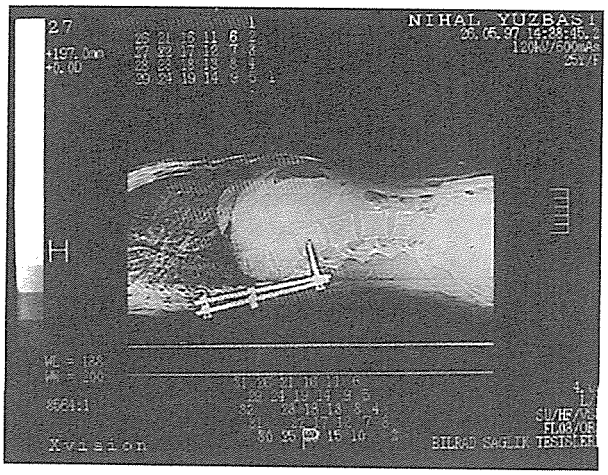

Figure 7.

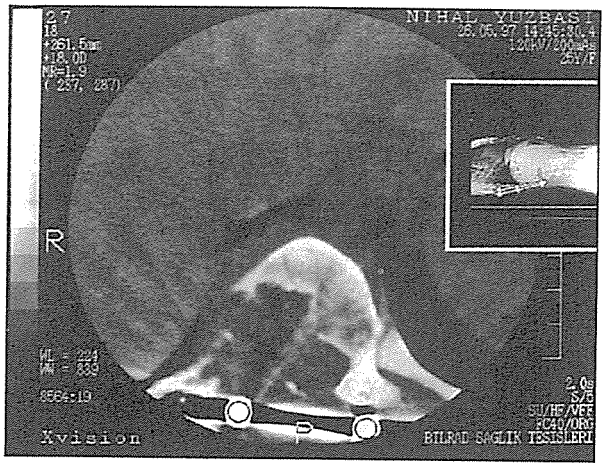

Figure 8.

of radio-and-chemotherapy was planned, and presently the patient is taking these treatments. The third month control examination revealed a very slight paraparesis of 4+/5. A second chemothrapy is instituted after completion of radiotherapy. Her control spinal CT showed no evidence of recurrence and no signs of cord compression (Fig. 8).

DISCUSSION

The posterior decompression procedure, which was accepted as undoubtedly the best modality in the treatment of thoracolumbar spinal tumors till the last ten or so years, lost its popularity due to its ineffectiveness in total tumor removal, inadequate axial stability, and causing postlaminectomy kyphosis (2, 8, 9). Especially for the metastatic tumors of this region, surgery was set aside and directly radiotherapy is considered as the mainstay of treatment. The surgical treatment is performed only for the histopathologically diagnosed metastatic tumors of which the primary site could not be established, or for surgically curable tumors (when the removal is complete) such as osteochondroma, or for the tumors cusing instability themselves, or the tumors relapsing in spite of effective radiotherapy (2, 9). Laminectomy is the treatment of choice for the tumors compressing the dural sac posteriorly (2, 8). Raffel et al. presented a review of their series on malignant tumors of childhood causing cord compression in which they stressed the necessity of surgical decompression (8). In this study, laminectomy alone yielded better results than radiotherapy alone, and even better outcome was achived when combined surgical and radiotherapy is undertaken. But posterior stabilization did not accompany laminectomy, and this issue is underemphasized (8).

The anterior approach has gained attention because of the tendency of most paraspinal tumors to occur ventrally, and the disadvantages of the posterior

approach (3, 4, 10). The adequateness of decompression and lack of kyphosis formation obtained by placing a strut graft and more effective reversal of pain complaint and neurological deficits have been the major advantages for these procedures (7, 9). Nevertheless, complications like pneumothorax, hemothorax, cerebrospinal fluid (CSF) hydrothorax, CSF fistulas, pulmonary embolism, myocardial infarction, and retroperitoneal hemorrhage are the drawbacks of the anterior approach over posterior approach (5, 10). However, the failure to achieve an acceptable stability, the presence of tumors extending in between the compartmental barriers, involvement of the cervicothoracic and thoracolumbar regions, and the will to totally remove and cure the lesions inevitably lead to combined procedures of anterior and posterior approaches together. The lateral extracavitary approach has basically stemmed from the costo-transversectomy which was initially used for the treatment of thoracic herniated disc disease, and has started to be employed for the tumors and traumatic lesions of these regions (6). For lesions located between Th2-Th10 vertebrae, anterior construction and posterior instrumentation is undertaken, while for the lesions between Th11-L4, anterior construction and anterior and posterior instrumentation is needed (2, 7, 9). Since these are expensive major surgical procedures and cause increased rate of morbidity and mortality, alternative modalities of treatment have been searched for (2, 7). As a result, newer techniques like 1) anterior decompression and stabilization with methacrylate filled in the defect with a modified silicone tube, or 2) vertebrectomy and reconstruction via a thoracoscopic route have begun to appear recently. This new and less invasive technique led to less blood loss, less time of chest tubing, less need for analgesic medications, and shorter periods of intensive care and hospital stays compared with the patients who underwent thoracotomy (3). Furthermore, the one-stage posterolateral decompression and stabilization procedure (8, 9) used primarily for thoracolumbar burst fractures, has been used for spinal tumors by Shaw et al. (9). The approach has since gained wide acceptance and has begun to be employed for the tumors of the thoracolumbar region especially for the dumbbell and paraspinal tumors. Mc Cormick (7) reported the results of 12 patients with no significant motor deficit and no mortality. Only two patients died because of systemic tumor dissemination long after the spinal surgery. One patient exhibited asymptomatic local tumor recurrence. These successful rates proved the posterolateral approach to be quite safe when compared to single anterior or posterior routes (7).

The two cases operated in our department had type-4 (according to Mc Cormick's classification) paraspinal tumors that invaded only the posterior part of the vertebral body, so no anterior grafting was necessary. We conclude that this approach should be employed widely for the paraspinal tumors because of the shortened time of surgery (averaging 105 mins), adequateness of exposure, ability to carry out the decompression and stabilization all in one session, less probability of complications, and early ambulation of the patient.

REFERENCES

1. Benzel EC. The lateral extracavitary approach to spine using the three quarter prone position. J Neurosurg, 71: 838-841, 1989.
2. Cooper PR, Errico TJ, Martin R, Crawford B, DiBartolo T. A systematic approach to spinal reconstruction after anterior decompression for neoplastic disease of the thoracic and lumbar spine. Neurosurgery 32: 1-8, 1993.
3. Dickman CA, Rosenthal D, Karahalios DG, Paramore CG et al. Thoracic vertebrectomy and reconstruction using a microsurgical thoracoscopic approach. Neurosurgery 38: 279-290, 1996.
4. Errico TJ, Cooper PR. A new method of thoracic and lumbar body replacement for spinal tumors: Technical note. Neurosurgery 32: 678-681, 1993.
5. Harrington KD. Anterior cord decompression and spinal stabilization for patients with metastatic lesions of the spine. J Neurosurg 61: 107-117, 1984.
6. Maiman DJ, Larson FJ, Luck E, El-ghatit A. Lateral extracavitary approach to the spine for thoracic disk herniation. Neurosurgery, 14: 178-182, 1984.
7. McCormick PC. Surgical management of dumbbell and paraspinal tumors of the thoracic and lumbar spine. Neurosurgery 38: 67-75, 1996.
8. Raffel C, Neave NCD, Lavine S, McComb JG. Treatment of spinal cord compression by epidural malignancy in childhood. Neurosurgery 28: 349-352, 1991.
9. Shaw B, Mansfield FL, Borges L. One-stage posterolateral decompression and stabilization for primary and metastatic vertebral tumors in the thoracic and lumbar spine. J Neurosurg 70: 405-410, 1989.
10. Sundaresan N, Galicich JH, Lane JM, Bains MS. Treatment of neoplastic epidural cord compression by vertebral body resection and stabilization. J Neurosurg 63: 676-684, 1985.

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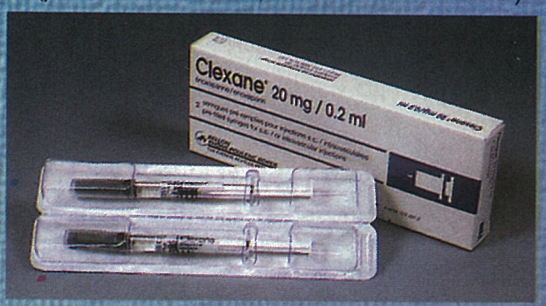

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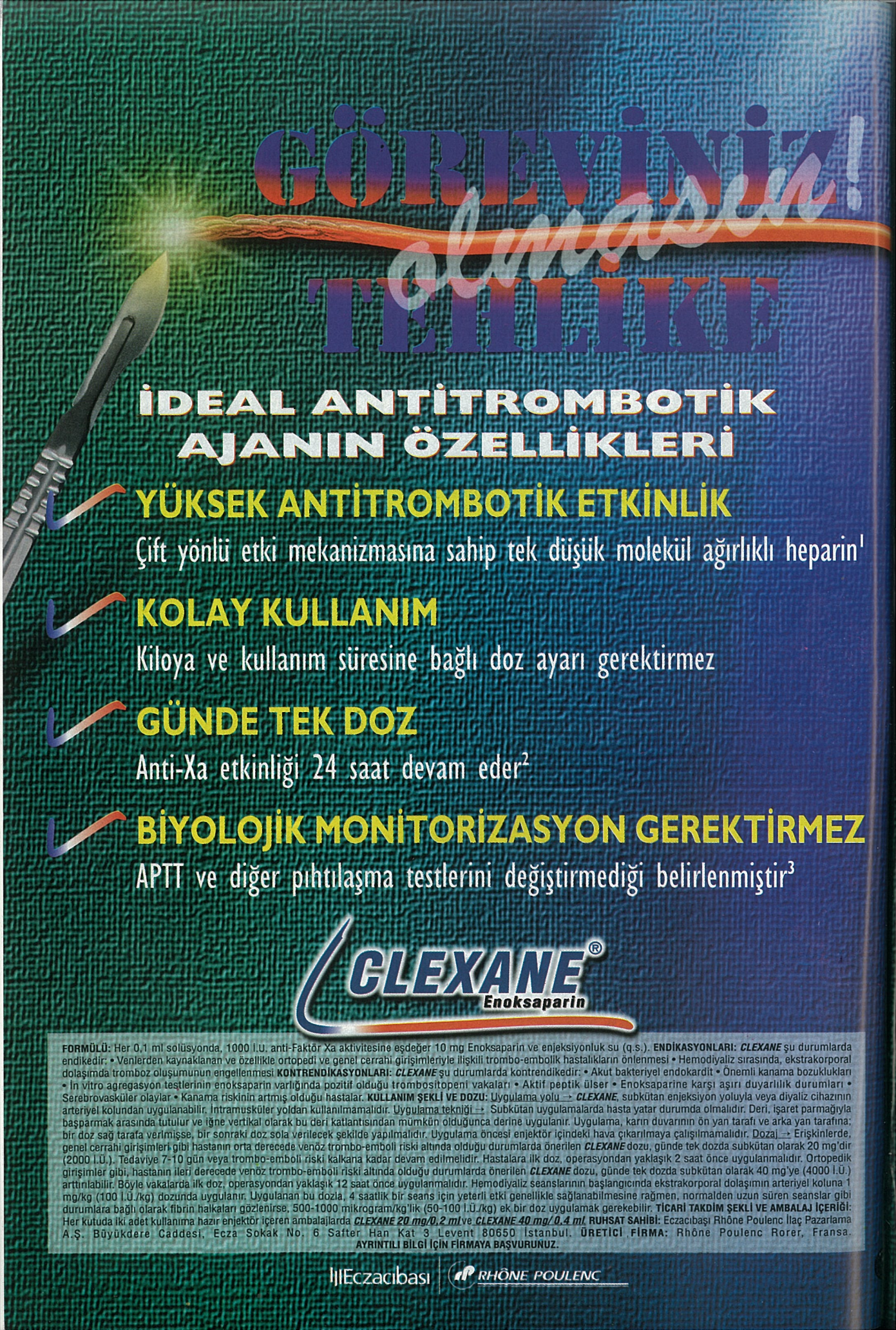
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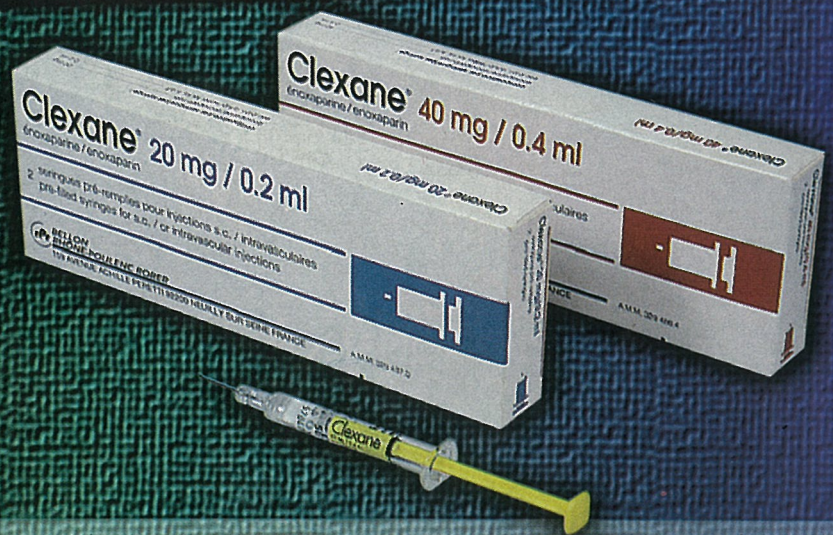
Enoksaparin



FORMÜLÜ: Her 0,1 ml solüsyonda, 1000 I.U. anti-Faktör Xa aktivitesine eşdeğer 10 mg Enoksaparin ve enjeksiyonluk su (q.s.). **ENDİKASYONLARI:** ***CLEXANE*** şu durumlarda endikedir: • Venlerden kaynaklanan ve özellikle ortopedi ve genel cerrahi girişimleriyle ilişkili trombo-embolik hastalıkların önlenmesi • Hemodiyaliz sırasında, ekstrakorporal dolaşımda tromboz oluşumunun engellenmesi **KONTRENDİKASYONLARI:** ***CLEXANE*** şu durumlarda kontrendikedir: • Akut bakteriyel endokardit • Önemli kanama bozuklukları • İn vitro agregasyon testlerinin enoksaparin varlığında pozitif olduğu trombositopeni vakaları • Aktif peptik ülser • Enoksaparine karşı aşırı duyarlılık durumları • Serebrovasküler olaylar • Kanama riskinin artmış olduğu hastalar. **KULLANIM ŞEKLİ VE DOZU:** Uygulama yolu → ***CLEXANE***, subkütan enjeksiyon yoluyla veya diyaliz cihazının arteriyel kolundan uygulanabilir. İntramüsküler yoldan kullanılmamalıdır. Uygulama tekniği → Subkütan uygulamalarda hasta yatar durumda olmalıdır. Deri, işaret parmağıyla başparmak arasında tutulur ve iğne vertikal olarak bu deri katlantısından mümkün olduğunca derine uygulanır. Uygulama, karın duvarının ön yan tarafı ve arka yan tarafına; bir doz sağ tarafa verilmişse, bir sonraki doz sola verilecek şekilde yapılmalıdır. Uygulama öncesi enjektör içindeki hava çıkarılmaya çalışılmamalıdır. Dozaj → Erişkinlerde, genel cerrahi girişimleri gibi hastanın orta derecede venöz trombo-emboli riski altında olduğu durumlarda önerilen ***CLEXANE*** dozu, günde tek dozda subkütan olarak 20 mg'dir (2000 I.Ü.). Tedaviye 7-10 gün veya trombo-emboli riski kalkana kadar devam edilmelidir. Hastalara ilk doz, operasyondan yaklaşık 2 saat önce uygulanmalıdır. Ortopedik girişimler gibi, hastanın ileri derecede venöz trombo-emboli riski altında olduğu durumlarda önerilen ***CLEXANE*** dozu, günde tek dozda subkütan olarak 40 mg'ye (4000 I.Ü.) arttırılabilir. Böyle vakalarda ilk doz, operasyondan yaklaşık 12 saat önce uygulanmalıdır. Hemodiyaliz seanslarının başlangıcında ekstrakorporal dolaşımın arteriyel koluna 1 mg/kg (100 I.Ü./kg) dozunda uygulanır. Uygulanan bu dozla, 4 saatlik bir seans için yeterli etki genellikle sağlanabilmesine rağmen, normalden uzun süren seanslar gibi durumlara bağlı olarak fibrin halkaları gözlenirse, 500-1000 mikrogram/kg'lık (50-100 I.Ü./kg) ek bir doz uygulamak gerekebilir. **TİCARİ TAKDİM ŞEKLİ VE AMBALAJ İÇERİĞİ:** Her kutuda iki adet kullanıma hazır enjektör içeren ambalajlarda ***CLEXANE 20 mg/0,2 ml*** ve ***CLEXANE 40 mg/ 0,4 ml*** **RUHSAT SAHİBİ:** Eczacıbaşı Rhône Poulenc İlaç Pazarlama A.Ş. Büyükdere Caddesi, Ecza Sokak No. 6 Safter Han Kat 3 Levent 80650 İstanbul. **ÜRETİCİ FİRMA:** Rhône Poulenc Rorer, Fransa.
AYRINTILI BİLGİ İÇİN FİRMAYA BAŞVURUNUZ.

Eczacıbaşı | RHÔNE POULENC