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A COMPARISON OF CLINICAL OUTCOMES OF DEBRIDEMENT AND BIOPSY PROCEDURES VERSUS WIDE EXCISION IN CHEST WALL TUBERCULOSIS TREATMENT AT TEACHING RAZI HOSPITAL OF RASHT DURING 2006 TO 2015

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ABSTRACT

Background: Chest wall tuberculosis (CWTB) is rare and its clinical presentation, may be mistake with a pyogenic abscess or chest wall tumor. A diagnosis and treatment of chest wall tuberculosis (CWTB) is both difficult and controversial. There is not a safe and convenient method for surgical treatment of chest wall tuberculosis. The aim of this study was to discuss on the optimal diagnosis and treatment of (CWTB).
Methods: During a 10-year period (2006–2015), 35 cases with chest wall tuberculosis were managed by our team. Patients' medical records were retrospectively reviewed. After confirming the diagnosis by histopathological examination, patients underwent surgical management with two methods, wide resection with reconstruction and wide debridement
Results: There were 29 male and 6 female patients. Patients' age ranged from 22 to 79 years. Cough was the most common clinical complaint in this study, followed by pain and tenderness, withdrawal of pus and bloody sputum. 21 patients had abscess and 14 patients had a chest wall mass and 8 present with osteomyelitis. Diagnosis confirmed with needle aspiration in 11 patients, biopsy in 15 patients and biopsy+aspiration in 9 patients. Surgical procedure was drainage with debridement in 17 patients, wide resection in 18 patients. Fistula formation were detected in 8 patients after debridement and 1 patient after wide resection (p=0.0002). The median length of stay in debridement group was 4 days and in resection group was 7 days. The recurrence was occurred in 4 cases after debridement and none case after resection.
The highest percentage of chest lesions occurred in the anterior (54.3%), lateral (31.4%) and posterior (14.3%). There was no lesion infection in patients with wide excision, while it was observed in debridement group in 11.8% of patients. Tuberculosis medication was used 9 months after debridement and 6 months after resection (p = 0.625). There was no mortality in both groups.
Conclusion: chest wall tuberculosis mimics symptoms and signs of chest wall tumors or abscesses. The combination of symptoms and radiographic findings suggests the pathologic diagnosis of tuberculosis. Wide resection and reconstruction are shown to have lower rates of fistula formation. Medical treatment must be started immediately after surgery and resection is a better surgical technique with less complications and recurrence.

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Introduction

Tuberculosis, one of the oldest diseases known to affect humans, is a major cause of death worldwide. Tuberculosis caused by a type of bacterium called Mycobacterium tuberculosis affects the lungs, although in as many as on third of cases, other

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organs are involved. Mycobacterium belongs to the Mycobacteria family from the actinomycetes genus. Of the pathogenic species belonging to the M. tuberculosis complex, the most common and important agent of human disease is M. tuberculosis [1]. The pathogenesis of a tuberculous abscess of the chest wall occurs through direct extension from the underlying pleural or pulmonary tuberculosis, 2) direct extension from lymphadenitis of the chest wall, and 3) hematogeneous dissemination from dormant tuberculous lesions. All infections caused by drug-sensitive strains will be improved if treated appropriately. If left untreated or not treated properly, TB disease can be fatal within 5 years in 50-65% of cases. Tuberculosis is usually transmitted in airborne droplets expelled when an infected person coughs or sneezes. Recent estimates on the global trend indicate that the incidence of tuberculosis in 2009 has been constant or decreasing in most areas. This trend began in 2004 and it seems that it continues with an average annual drop of less than 1% worldwide. One third of patients died within one year after diagnosis, and one half died within five years. With prompt and effective medication, patients have the very best chance of recovering fully. However, the inappropriate on incorrect use of anti-TB drugs may in addition to reducing the mortality rate, causes a large number of chronic infectious agents, often due to drug-resistant basil. Skeletal tuberculosis accounts for 2.6% of all tuberculosis cases and chest wall tuberculosis has been reported to be in only 1% to 10% of bony tuberculosis [3]. Studies show that bone involvement in chest wall tubes was reported between 50% and 87%, and rib involvement was reported in 7% of cases [4]. Tuberculosis is the second cause of rib destruction after metastasis. Differentiation of rib tuberculosis from cold abscess or tumor of the chest wall may be difficult. Chest wall tuberculosis is rare and still a diagnostic and therapeutic challenge. Cold abscess, meaning swelling without inflammation, is the characteristic presentation of the chest wall TB. Cold abscess of chest wall is generally solitary lesions but multiple lesions may be found. Tuberculosis of the chest wall constitutes 1% to 5% of all cases of musculoskeletol TB, which in turn is far less frequently encountered than pulmonary infection alone and represents between 1% to 2% of TB overall. The low incidence may be because the breast tissue, along with the skeletal muscle and spleen, appears to be relatively resistant to TB [6]. TB abscesses of the chest wall are usually seen at the margins of the sternum and along the rib shafts, and can also involve the costochondral junctions, costovertebral joints and the vertebrae [10]. Surgical interventions are needed cases of multidrug-resistant tuberculosis and also in selected cases of nontuberculosis mycobacterial infections. Immunodeficiency diseases such as HIV / AIDS and the emergence of multi-drug resistant tuberculosis (MDR) strains have resulted in the emergence of drug resistant TB has led to surgery once again being used as a supplement to drugs for the treatment of TB. Today, the conventional techniques of Schede Thoracoplasty and Alexander are replaced by more restrictive and appropriate approaches which preferably are performed in high-volume chest surgery centers [11]. The optimal surgical management of chest wall tuberculosis with and without surgical method is discussed. In some cases reported, good clinical outcomes have been observed only with anti-TB drugs; however, a few studies have reported successful treatment with anti-tuberculosis and the abscess were not cured and even recurred or progressed despite adequate medical treatment [2 & 12]. So far, various surgical strategies have been proposed in studies. The results of limited localized debridement were associated with repeated recurrence requiring repeated operation. Diagnosis of the chest wall tuberculosis depends on the classic lesion of caseous and identification of acid-fast basil.

Despite the low success rate of diagnosis, needle aspiration biopsy is a simple procedure and should be performed to prove preoperative diagnosis. If initial aspiration biopsy is encountered with failure, diagnosis with incisional or excisional biopsy or surgical resection is proved to prepare specimens for pathology [2, 13, and 14]. Wide resection involving chest wall bone can lead to unwanted wide surgery. The surgical options involve removing (resection) or maintaining a healthy lung tissue. The choice of incision technique depends on the operation, the physiological status of the patient, and the benefits and predicted and planned limitations. The wide resection of the chest wall has been successfully performed since the 19th century [11]. After en-bloc resection even in large parts of the chest, reconstructing soft tissue and the skin closure can be performed without significant difficulty. Today, full-thickness resection of the chest wall can be done with acceptable morbidity and mortality. In the study by Gözübüyük et al (2009) in Turkey, surgical procedures for chest wall tuberculosis were studied. In a study retrospective study, they evaluated 10 patients with tuberculosis of the chest wall who were treated with surgery in addition to antituberculous chemotherapy in the last 8 years. Seven of the lesions were located on the anterior chest wall, and three of the lesions were on the lateral chest wall. Duration of symptoms was between 2 and 4 months. Surgical therapy consisted of evacuation of the cold abscess material from the cavities and wide debridement of the soft tissue planes in all patients. Partial rib resections were performed in six patients owing to costal or chondral involvement. In all cases, caseous necrosis and granuloma and giant langerhans cells were observed in the histopathology of the resected areas. No mortality and complications were observed [15]. In the study by Tanaka et al., (2012), the medical records of 22 patients treated at our institution were reviewed. Two patients were managed by antitubercular medications alone; eight patients were managed by medication and open drainage. Five patients underwent open drainage with subsequent radical surgery at a constant interval of time, and the mean duration between open drainage and radical surgery was 9.8 weeks (range, 3-12). Seven patients underwent radical surgery without prior open drainage. Five patients required rib resections, and curettage of infected pleural peel was necessary in 5 patients. Antitubercular drugs were administered basically for more than 6 months regardless of surgical management, including for more than 1 month prior to radical surgery. Postoperative empyema was seen in 1 patient after radical surgery. The mean follow-up duration was 32.8 months (range, 3-100), and there was no recurrence. Antitubercular therapy with or without open drainage can be a viable choice. In addition, in the

study by Aghajanzadeh et al. (2010), a diagnosis and treatment of the chest wall tuberculosis were studied. During a 10-year period (1998–2009), 12 medical records of patients with chest wall tuberculosis were retrospectively reviewed. After confirming the diagnosis by histopathological examination, patients underwent surgical management. There were 8 male and 4 female patients. Patients' age ranged from 4 to 60 years. Eight patients had a fluctuating abscess and 4 had a chest wall mass. Surgical procedure was drainage along with debridement in 6 patients, wide debridement along with rib resection in 2 patients and wide debridement along with chest wall resection and reconstruction in 4 patients. Recurrence of cold abscess and fistula formation were detected in 2 patients after a follow-up of 1 to 5 years. Outcome of patients with chest wall tuberculosis was good. In the study by Keum et al., in Korea (2012), the aim was
to determine the characteristics of this disease and to suggest an optimal treatment strategy, we reviewed patients treated by surgical management. Between October 1981 and December 2009, 68 patients treated by surgical management for a tuberculous abscess of the chest wall were reviewed retrospectively. Of 33 men and 35 women, 31 patients had a current or previous history of tuberculosis. The main complaints were chest pain, a palpable mass, pus discharge, and coughing. A preoperative bacteriologic diagnosis was performed in 12 patients. Abscess excision was performed in 54 cases, abscess cavity excision and partial rib resection in 13, and abscess excision and partial sternum and clavicle excision in 1 case. Postoperative wound infection was noted in 16 patients and a secondary operation was performed in 1 patient. Recurrence occurred in 5 patients (7.35%). Reoperation with abscess excision and partial rib resection was performed in all of the 5 cases. Complete excision of the abscess and primary closure of the wound with obliteration of space would decrease postoperative complications. Anti-tuberculosis medication may reduce the chance of recurrence. Therefore, in this study, we aimed to investigate the results of debridement surgery with wide incision in patients with chest wall tuberculosis, so that we can present the optimal surgical treatment strategy with the least relapse rate and complications in these patients.

Method

This study was a retrospective cohort study. In this study, all chest wall tuberculosis patients undergoing surgical treatment at Razi teaching & training Hospital from 2006 to 2015 were enrolled in the study. The inclusion criteria were patients with TB with chest wall abscess underwent surgical treatment and the exclusion criteria: patients with AMPIM or malignant thoracic were excluded from the study. Diagnosis of chest wall tuberculosis for patients was based on patient's history, physical examinations, laboratory findings and radiology images of chest X-ray including chest x-ray, chest spiral CT scan and in some patients, fistulogram. A definitive diagnosis was based on a pathology finding including granuloma with caseous necrosis, langerhans cells, and tuberculosis bacillus on the surgical specimen. Preoperative bacteriological studies including staining for acid-fast bacilli in sputum…polymerase chain reaction (PCR) or preoperative culture was not performed routinely for all patients. Cytological evaluation for patients with suspected chest wall malignancy and microbiological studies in patients with inflammation symptoms due to infectious processes were performed by needle aspiration. Biopsy of the tissue did perform during initial aspiration. An incisional biopsy was done when there was no possibility for diagnostic aspiration. A diagnose is made when a combination of the following conditions is met: caseous necrosis granulomatosis or langerhans giant cell in surgical debridement or biopsy specimens or TB detection. After confirming the diagnosis, the patients underwent surgery. Data included demographic characteristics including gender, age, history of pulmonary tuberculosis, pulmonary tuberculosis, breast tuberculosis, lymphatic and unspecified tuberculosis ..., clinical symptoms and patient's main complaint (pain and tenderness, palpable mass, withdrawal of pus, cough, blood sputum ...), number of lesions (single or multiple), location of lesion (lateral, anterior, posterior), anti-TB drugs (yes and no) and duration of drug treatments, surgical procedures (simple biopsy and debridement, wide excision with mass resection or an abscess associated with resection of the rib and clavicle, sternum ...), the occurrence of recurrence of the lesion, complications including fistula, infection of the site of operation, etc. were pre-prepared in the checklist and collected. Needed information was taken out from the patient's records. Information defect in the records was one of the limitations of this study and similar studies. Information about some variables can be obtained by contacting the patient and follow-up. All patients were visited in an outpatient for up to one month in terms of relapse, fistula and complications of antibiotics and other complications and patient's information was recorded. After collecting the data, they were entered into the SPSS software and finally were analyzed by descriptive statistics.

Results

In this study, 35 patients were investigated; 17 patients were treated with debridement and 18 patients were treated with wide excision. . 29 patients were male and 6 patients were female. The majority of patients were in age group of 31-40 years. The youngest patient was 22 years old and the oldest patient was 79 years old. 8 patients had osteomyelitis. Diagnosis was confirmed by aspiration in 11 patients, biopsy at 15 and biopsy + aspiration in 9 patients. The median length of stay in debridement group was 4 days and in resection group was 7 days and in the resection group it was zero. There was no mortality in both groups. Tuberculosis medication was used 9 months after debridement and 6 months after resection. Fishers Exact test showed that there was no statistically significant relationship between the frequency distribution of gender in patients with chest wall tuberculosis in two groups treated with debridement and wide excision (P = 0.93%) It was also found that there was no statistically significant relationship between frequency distribution of the age groups of patients with

chest wall tuberculosis in two groups treated with debridement and wide excision (P = 0.554). T-test showed that no significant difference was found between the mean age of patients with chest wall tuberculosis in both groups treated with debridement and wide excision (P = 0.069) (Table 1).

Table 1: Some characteristics of patients with chest wall tuberculosis in the group treated with debridement and wide excision

Variable	Group	debridement		wide excision		Total		Statistical Estimate
		Number	percentage	Number	percentage	Number	percentage	
Gender	Male	14	82.4	15	83.3	29	82.9	P=0.93
	Female	3	17.6	3	16.7	6	17.1	
Age (year)	Less than 30	5	29.4	3	16.7	8	22.9	P=0.545
	31 - 40	7	41.2	6	33.3	13	37.1	
	41-50	3	17.6	2	11.1	5	14.3	
	51-60	1	5.9	3	16.7	4	11.4	
	over 60 years	1	5.9	4	22.2	5	14.3	
Age (years) (Mean ± SD)		37.7 ±10.72		46.77 ±17.13		42.37 ±14.89		P=0.069

Fishers Exact test showed that there was no significant statistical relationship between the frequency distribution of clinical complaints (P> 0.05), the history of tuberculosis (P = 0.264), the number of lesions (P = 0.679), between the location of lesions (P = 0.208), osteomyelitis (P = 0.691) in patients with chest wall tuberculosis in the group treated with debridement and wide excision (Table 2).

Table 2: Evaluation of some patients' clinical complaints, history of tuberculosis, multiple lesions, location of lesions, and osteomyelitis in patients with chest wall tuberculosis in debridement group

	Variable	Group	debridement		wide excision		Total		Statistical Estimate
			Number	Percent	Number	Percent	Number	Percent	
Clinical complaints	Cough	Seen	13	76.5	13	72.2	26	74.3	P= 0.774
		Not seen	4	23.5	5	27.8	9	25.7	
	Blood sputum	Seen	4	23.5	2	11.1	6	17.1	P=0.402
		Not seen	13	76.5	16	88.9	29	82.9	
	Withdrawal of pus	Seen	4	23.5	3	16.7	7	20	P=0.691
		Not seen	13	76.5	15	83.3	28	80	
	Pain and tenderness	Seen	9	52.9	10	55.6	19	54.3	P=0.877
		Not seen	8	47.1	8	44.4	16	45.7	
History of tuberculosis		Seen	6	35.3	3	16.7	9	25.7	P=0.262
		Not seen	11	64.7	15	83.3	26	74.3	
		Total	17	100	18	100	35	100	
Number of lesions		Single	15	88.2	15	83.3	30	85.7	P=0.679
		Multiple	2	11.8	3	16.7	5	14.3	
		Total	17	100	18	100	35	100	
		Anterior	4	41.2	12	66.7	19	54.3	P=0.208
		Posterior	4	23.5	1	5.6	5	14.3	
		Lateral	6	35.3	5	27.8	11	31.4	

	Total	17	100	18	100	35	100	
Osteomyelitis	Seen	3	17.6	5	27.8	8	22.9	P=0.691
	Not seen	14	82.4	13	72.2	27	77.1	
	Total	17	100	18	100	35	100	

Chi-square test showed that there was no statistically significant relationship between receiving drug treatment in patients with chest wall tuberculosis in debridement and wide excision groups (P = 0.625) (Table 3).

Table 3: Evaluation of drug treatment in patients with chest wall tuberculosis in debridement group

drug treatment	debridement		wide excision		Total		Statistical Estimate
	Number	percentage	Number	percentage	Number	percentage	
Seen	8	47.1	7	38.9	15	42.9	P=0.625
Not seen	9	52.9	11	61.1	20	57.1	
Total	17	100	18	100	35	100	

Fishers Exact Test also showed that there was no statistically significant correlation between the incidence of abscess, mass lesion or tumor lesion (both P = 0.086), between the types of biopsy (P = 0.574) in patients with chest wall tuberculosis in the group treated with debridement and wide excision [Table 4].

Table 4: Evaluation of the types of lesions (abscess and mass) and the status of the biopsy in patients with chest wall tuberculosis in group treated with debridement

Type of lesion	Group	debridement		wide excision		Total		Statistical Estimate
		Number	percentage	Number	percentage	Number	percentage	
Abscess	seen	13	76.5	8	44.4	21	60	P=0.086
	not seen	4	23.5	10	55.6	14	40	
	total	17	100	18	100	35	100	
Mass	seen	4	23.5	10	55.6	14	40	P=0.086
	not seen	13	76.5	8	44.4	21	60	
	total	17	100	18	100	35	100	
Type of biopsy	Aspiration	4	23.5	7	38.9	11	31.4	P=0.574
	biopsy	9	52.9	6	33.3	15	42.9	
	Aspiration + Biopsy	4	23.5	5	27.8	9	25.7	
	Total		100	18	100	35	100	

Fishers Exact Test also showed that there was no statistically significant correlation between the incidence of postoperative complications in patients with chest wall tuberculosis in group treated with debridement and wide excision (P = 0.002) (Table 5).

Table 5: Evaluation of postoperative complications in patients with chest wall tuberculosis in debridement group

postoperative complications Group	debridement		wide excision		Total		Statistical Estimate
	Number	percentage	Number	percentage	Number	percentage	
without complication	7	41.2	17	94.4	24	68.6	P=0.002
Fistula	8	47.1	1	5.6	9	25.7	
Wound infection	2	11.8	0	0	2	5.7	
Total	17	100	18	100	35	100	

Discussion and conclusion

Uberculous abscesses of the chest wall are not frequently encountered and constitute less than 10% of skeletal tuberculosis. The presentation of this disease is a progressively enlarging mass with or without pain. Sometimes abscesses make a fistulous tract to the pleural cavity and destroy underlying bone or cartilage [2]. In the present study, there was no statistically significant relationship between distribution of frequency of gender, age and average age of patients with chest wall tuberculosis in the group treated with debridement and wide excision. The youngest patient was 22 years old and the oldest patient was 79 years old. In this study, it was found that there was no statistically significant relationship between the location of lesions and types of biopsy in patients with chest wall tuberculosis in the group treated with debridement and wide excision, but it was found that there was a statistically significant relationship the incidence of postoperative complications in patients with chest wall tuberculosis in the group treated with debridement and wide excision. In this study, 29 patients were male and 6 patients were female and the mean age was 42.77 ± 14.89. In the study of Kim et al. [5], 40 patients (50%) had a history of previous or current lung tuberculosis and one of the patients had spinal tuberculosis. Cough was the most common clinical complaint in this study, followed by pain and tenderness, withdrawal of pus and bloody sputum which had the highest percentage of clinical complaints and did not show a significant difference in the group treated with debridement. In the study of Keum et al. [2], 31 patients had no past or present history of tuberculosis. The main complaint of patients was chest pain, palpable mass, pruritus and cough, which was almost the same as the current one. In the study of Aghajanzadeh et al. [16], seven patients had localized tenderness and four patients had soft abscess. Chest wall tuberculosis lesions are usually solitary but multiple lesions may be found in some patients. In this study, 30 patients had a solitary lesion and 5 patients had multiple lesions. In the study by Keum et al. [2], 60 cases out of 64 patients had a solitary lesion. In this study, the highest percentage of chest lesions was associated with anterior (54.3%), lateral (31.4%) and posterior (14.3%). In addition, in the study of Kim et al. [5], the abscess site was the right chest wall in 51 patients, the left in 14 patients and anterior chest in 15 patients. In the study conducted by Aghajanzadeh [16], 4 patients had anterior abscess location, the posterior in 5 patients and three patients had lateral. As it is known, anterior abscess is the most common and these results are consistent with the results of our study. The results of the present study related to the history of tuberculosis revealed that there was no statistically significant relationship between the history of tuberculosis in patients with chest wall tuberculosis in the group treated with debridement. In Keum et al. [2], 22 patients (32.4%) had a history of tuberculosis or current tuberculosis. In general, retrospective studies based on medical records have the limitation that it is difficult to determine the exact mechanism of the tuberculosis abscess of the chest wall and often diagnosed by postoperative pathologic examination. Preoperatively, it can be confirmed by detecting acid-fast bacilli, polymerase chain. Many authors recommend needle aspiration or incisional biopsy to confirm the tuberculosis disease or to exclude other inflammatory disease (8, 17 and 8). Faure et al. [6] reported a diagnostic rate of only 36.3% by needle aspiration. However, needle aspiration diagnosis of tuberculosis is not as reliable and some authors recommend surgical biopsy. In the study by Keum et al., only 12 patients were diagnosed preoperatively with acid-fast bacilli staining, polymerase chain reaction, or culture of bacilli, and the other cases were diagnosed with clinical information and CT findings, and confirmed with postoperative pathologic examination. In the study by Aghajanzadeh et al. [16], the definitive diagnosis was obtained by incisional biopsy. FNA in tru-cut needle biopsy is beneficial for confirming tuberculosis or other causes. In aspiration and FNA or tru-cut biopsy of patients, diagnosis was confirmed in three patients. In this study, CT revealed rib destruction in only one patient. The combination of soft tissue mass, lytic bone lesions and sequestrum (dead tissue) in CT scan thorax is suggestive of the chest wall tuberculosis [7]. The treatment of chest wall tuberculosis is still controversial and there is no agreed method for treatment. Anti-drug medication may be very important. Very few studies have reported successful treatment alone with anti-TB medication (43, 45, 46). In the study by Kim et al., [5], preoperative anti-tuberculosis medication was given for 3.1+ 1.8 months in 29 patients. 16 patients received quadruple therapy with isoniazid, rifampin, ethambutol and 12 patients received triple therapy including isoniazid, ethambutol and rifampin and one patient received Cycloserine, protionamide, aminosalicylic acid, and levofloxacin. In the present study, 7 patients received pre-operative drug medication in the debridement group. Surgical procedures are controversial in this respect. Weissberg mentioned in his commentary that this disease is best treated with antimicrobials and drainage, with debridement and excision reserved for the most extensive cases. The optimal surgical approach consists of excising the abscess and primary closure of the wounds, but the extent of resection is not defined. However, complete excision of the abscess including the abscess wall, fistulous tract, enlarged lymph node, and adjacent bony structure avoiding unnecessary extensive chest wall resection would be important to reduce complications and recurrence [20]. If there is any bony destruction or suspicious periosteal granulation tissue exists, if a fistulous tract overlays the rib or sternum, or for complete removal of underlying pleural abscess, the rib should be partially removed. Curettage of the infected pleural peel should be performed. After extensive debridement of the lesion, the space should be obliterated meticulously. If any dead space remains, a postoperative wound infection or chronic sinus formation can occur [2]. In the current study, 35 patients were studied, of which 17 patients were treated with debridement and 18 patients were treated with wide excision. There was no wound infection in patients with wide excision while it was seen in 11.8% of patients in debridement group. In addition, fistula was also reported in 47.1% of patients with debridement and 5.6% in patients with wide excision, which was statistically significant. In the study by Keum et al., [2], a high incidence of postoperative wound infection was noticed (11.24%), which may be due to inadequate control of dead space. In 1 patient,

reoperation including fistulectomy and partial rib resection was performed after 3 months of conservative management. Adequate muscle mobilization or a flap and small indwelling catheter would decrease the incidence of wound infection. Three other patients recurred among 16 postoperative wound infection patients, but at new sites. According to the results of the study, the median length of stay in debridement group was 4 days and in resection group was 7 days. The recurrence was occured in 4 cases after debridement and none case after resection. There was no mortality in both groups which was consistent with the study by Kim al. [5]. Due to the nature and characteristics of TB to assess the success of treatment and relapse or lack of it, careful care for patients is needed for a long period of time. In this study, tuberculosis medication was used 9 months after debridement and 6 months after resection. Postoperative medication is acceptable for acceptable recovery. The duration of anti-tuberculosis treatment is controversial, but at least 6 to 9 months of treatment is required for isoniazid and rifampin-based therapy [3 & 13]. Paik et al. [20] suggested medication for a minimum of 12 months especially in endemic geographical areas. Some case series studies have shown that anti-TB medication treatment has had good results alone [9 & 18]; however, in other studies, despite adequate medication treatment, the abscesses have not only recovered, but also relapsed or progressed [21]. We are of the opinion that medication treatment is not alone enough and a combination of wide debridement and anti-TB medication regimen are necessary. In the forthcoming study and according to previous studies, the results of the first group including wide excision patients, were more acceptable than debridement group, and its complications included relapses, ulcers and fistulas were much less the first group. The results of this study indicate that the results of post-resection and excision surgery are statistically better than debridement and drainage procedures. Also, recurrence and postoperative ulcer and fistula are more common in the debridement group and tuberculosis medication was used 9 months after debridement and 6 months after resection.

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