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Optimal treatment of descending necrotising mediastinitis

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Abstract

***Background* – Descending necrotising mediastinitis is caused by downward spread of neck infection and has a high fatality rate of 31%. The seriousness of this infection is caused by the absence of barriers in the contiguous fascial planes of neck and mediastinum.**

***Methods* – The recent successful treatment of seven adult patients with descending necrotising mediastinitis emphasises the importance of optimal early drainage of both neck and mediastinum and prolonged antibiotic therapy. The case is also presented of a child with descending necrotising mediastinitis, demonstrating the rapidity with which the infection can develop and lead to death. Twenty four case reports and 12 series of adult patients with descending necrotising mediastinitis published since 1970 were reviewed with meta-analysis. In each case of confirmed descending necrotising mediastinitis the method of surgical drainage (cervical, mediastinal, or none) and the survival outcome (discharge home or death) were noted. The χ^2 test of statistical significance was used to detect a difference between cases treated with cervical drainage alone and cases where mediastinal drainage was added.**

***Results* – Cervical drainage alone was often insufficient to control the infection with a fatality rate of 47% compared with 19% when mediastinal drainage was added ($p<0.05$).**

***Conclusions* – Early combined drainage with neck and chest incisions, together with broad spectrum intravenous antibiotics, should be considered standard care for this disease.**

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Keywords: descending necrotising mediastinitis, mortality, surgical treatment.

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Acute mediastinitis unrelated to oesophageal disease is a serious illness with a high mortality. The best term for mediastinitis which occurs as an extension of head and neck infection is descending necrotising mediastinitis; descending because the infection uses fascial planes in the neck to gain access to the mediastinum, and necrotising because the infection is often polymicrobial and gas-producing. Pearse[1] described 110 cases of mediastinitis of which 44 were descending from head and neck infections. In the post-antibiotic era this complication of neck infection is much less common. Estrera *et al*[2] reported the largest series since 1960 with 10 cases. We have successfully treated seven adult patients with descending necrotising mediastinitis and also present a child in whom the infection developed and spread rapidly, leading to death. This paper reviews these cases and presents a meta-analysis of 24 case reports and 12 series of adult descending necrotising mediastinitis since 1970.

Methods

CASE REPORT 1

A 35 year old male engineer with a past history of hepatitis B was admitted following transfer from the intensive care unit of a peripheral hospital. Five days prior to admission he had sought medical attention for odynophagia, hoarseness, and mild left otalgia for which he was given oral penicillin. Forty eight hours later he was admitted to the intensive care unit with bilateral pleuritic chest pain, fever, chills, progressive shortness of breath, and confusion. He was given intravenous penicillin and cefotaxime, but his condition worsened and required transfer to Ottawa within 24 hours.

Admission radiographs including a computed tomographic (CT) scan demonstrated left retropharyngeal gas and inflammatory changes, with extension via the fascial planes of the neck to the mediastinum (fig 1A and B). There were bilateral pleural effusions and lower lobe consolidation. The pericardial space was normal. Thoracocentesis revealed foul smelling pus with a white blood cell count of 10 800 and the Gram stain was positive for Gram positive cocci and bacilli, Gram negative bacilli, and anaerobes. Empyema was drained using bilateral chest tubes and the left retropharyngeal abscess was drained using an open anterior cervical approach. The patient required mechanical ventilation and received intravenous penicillin, metronidazole, and gentamicin.

Over the next five days his condition worsened, with the development of atrial arrhythmias, spiking fevers, and incomplete drainage of the pleural effusions requiring new chest tubes. Echocardiography showed a small pericardial effusion only. Cultures of pleural fluid grew beta-haemolytic *Streptococcus* and *Bacteroides fragilis* species. A follow up CT scan now showed the development of diffuse mediastinal fluid collections from the thoracic inlet to the diaphragm consistent with mediastinal abscess (fig 1C). The bilateral effusions persisted. An

Figure 1 (A) CT scan at the level of the hyoid bone in case 1 showing a collection of gas in the retropharyngeal soft tissues on the left side (arrow) and inflammatory changes in the parapharyngeal space. (B) CT scan at the level of the aortic arch showing gas within the mediastinum outlining the anterior wall of the aorta and posterior wall of the superior vena cava, increased width and density of the paratracheal mediastinal soft tissues, and bilateral pleural effusions. (C) CT scan at the level of the heart five days later showing a localised mediastinal fluid collection adjacent to the right side of the heart, diffuse thickening of the pericardium, bilateral pleural effusions, and basal atelectasis.

urgent operation was performed to drain the pleural and mediastinal sepsis by left pleuroscopy and decortication, and right thoracotomy, decortication, and drainage of the mediastinum. Closed irrigation systems were set up bilaterally.

Four days later the patient became haemodynamically unstable due to persistent left empyema and the echocardiogram now showed a larger pericardial effusion. Urgent reoperation was necessary to drain the pericardium and left pleural cavity through a left thoracotomy. Tracheostomy was necessary for prolonged ventilation.

The patient recovered slowly. The chest tubes were converted to empyema tubes without suction and withdrawn gradually. Antibiotic coverage was changed on the basis of cultures to cefazolin and clindamycin. The patient was transferred from the intensive care unit eight days after the last operation and discharged home two weeks following transfer to the floor. At the last follow up one year later he had made a complete recovery.

CASE REPORT 2

A 48 year old homosexual man came to the emergency department with a three week history of odynophagia, dysphonia, fever, and a sensation of neck swelling. He had already received a 14 day course of erythromycin. Two days prior to admission the patient noted pus draining from the right neck associated with a return of the fever. The HIV status was negative.

The patient was febrile without respiratory distress. There was a slight bulge of the right posterior pharyngeal wall but no oropharyngeal erythema. Anterior neck cellulitis was noted along with the abovementioned purulent drainage from the right neck. The patient had poor dentition with several carious teeth.

Chest and neck radiographs showed an increase in the width of the retropharyngeal soft tissue as well as air in the neck and mediastinum. A CT scan confirmed a diffuse parapharyngeal abscess which was contiguous with a collection of air and fluid throughout the mediastinum. Treatment consisted of intravenous gentamicin and clindamycin with early drainage of the right neck and mediastinum through a right thoracotomy. A closed irrigation system was established.

The patient made an uncomplicated recovery. Despite initial Gram stain results of Gram positive (cocci and bacilli) and Gram negative (bacilli) bacteria, only group C *Streptococcus* grew on definitive culture. He was discharged from the intensive care unit on the day following surgery and chest tubes were removed nine days later. The patient was discharged home 11 days after the operation and at the last follow up at eight months was doing well.

CASE REPORT 3

A 55 year old alcoholic man was admitted with a history of extensive bilateral neck swelling present for three days and purulent right sub-

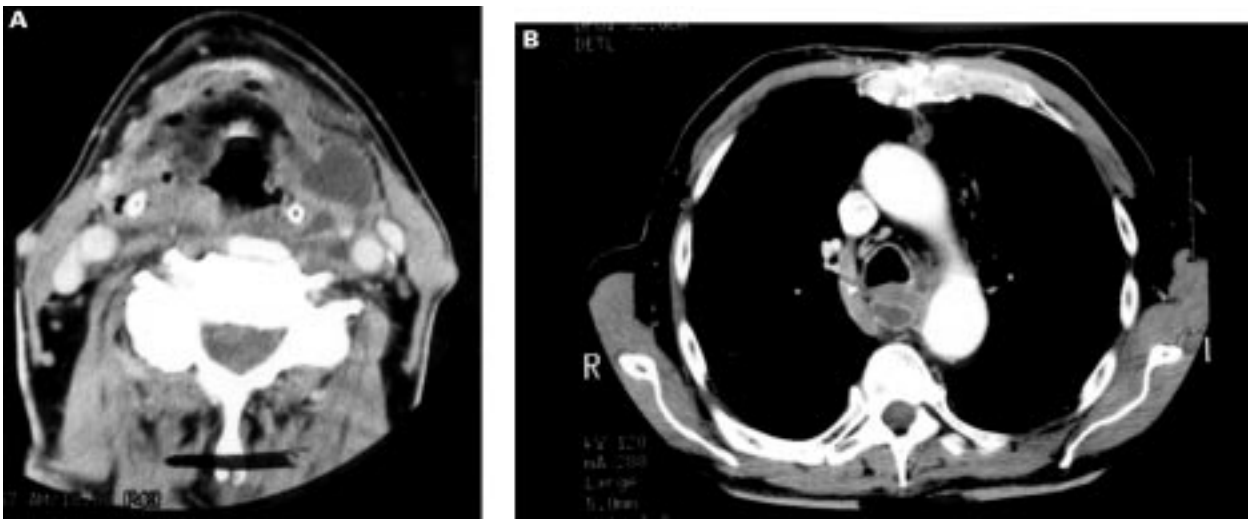

Figure 2 (A) CT scan showing left sided parapharyngeal space abscess and abnormal collections of gas in the soft tissues anteriorly and on the right side in case 4. (B) CT scan at the level of the subaortic window showing a fluid collection posterior to the trachea and inflammatory changes in the adjacent mediastinal fat.

mandibular drainage for one month. There was extensive neck swelling and erythema from the angles of the mandible bilaterally to midsternum; this was more prominent on the left side. Multiple fluctuant neck masses were palpable. The patient had multiple carious teeth. There was purulent drainage from the right submandibular duct. A 1×1 cm ulcer was noted at the right posterior tongue. The white cell count was elevated and serum sodium was low at 126. Chest radiography showed bilateral upper lobe densities. A CT scan showed extensive cavitating adenopathy from the angle of the mandible to the carina. Neck aspiration was carried out and sent for acid fast bacilli (AFB), fungi, and cultures. Intravenous antibiotic therapy consisting of penicillin G, metronidazole, and cloxacillin was started.

Open drainage of the neck was done within several hours of admission. Despite polymicrobial initial Gram stain, with Gram positive cocci and bacilli and Gram negative cocci and bacilli demonstrated, definitive cultures subsequently returned only group A *Streptococcus*. All AFB cultures were negative. Metronidazole and cloxacillin were discontinued.

The patient went on to develop necrosis of the skin of the anterior neck requiring debridement. The CT scan was repeated showing extensive retropharyngeal fluid collections. There were bilateral pleural effusions. The patient required repeat surgical drainage of the retropharyngeal abscesses and right thoracotomy was performed for drainage of the mediastinum and pleural cavity. A biopsy sample of a nodule in the right upper lobe showed metastatic squamous cell carcinoma.

The patient showed a remarkable recovery after the combined drainage. Panendoscopy was performed and tongue cancer was confirmed. No other metastases were found. The patient underwent split thickness skin grafting to the anterior neck. The tongue cancer was treated with radiotherapy.

CASE REPORT 4

A 71 year old man was admitted with a two day history of malaise, facial pain, and progressive sore throat with dysphagia, odynophagia, and dysphonia. He had noted anterior neck swelling in the preceding 24 hours. The patient had a temperature of 39°C with a tachycardia. Examination of the oropharynx showed a prominent right tonsil with purulent exudate and deviation of the uvula to the left. Flexible fibreoptic laryngoscopy revealed some right sided soft tissue swelling in the supraglottis. The patient was admitted to the intensive care unit with a diagnosis of right peritonsillar abscess with supraglottitis. Clindamycin therapy was instituted intravenously, and decadron was given.

The patient made a rapid recovery. Blood cultures obtained on admission were positive for Gram positive bacilli. Repeat laryngoscopy showed marked erythema of the posterior pharynx and false cords with pooling of saliva. Soft tissue radiographs of the neck were normal. A CT scan was performed which showed a large left neck abscess involving parapharyngeal, carotid, and retropharyngeal spaces (fig 2A and B). The retropharyngeal abscess was contiguous with a mediastinal collection extending to the diaphragm. There was, however, no gas in the mediastinal collection.

The patient required open drainage of the right and left neck. Urgent thoracotomy was considered, but proved unnecessary because of rapid recovery following neck drainage alone. He was discharged from hospital 10 days after the operation.

CASE REPORT 5

A 66 year old woman, a heavy smoker with early dementia, was referred for management of a large asymptomatic mass in the right neck present for two months. Incisional biopsy showed this to be a lymph node metastasis with

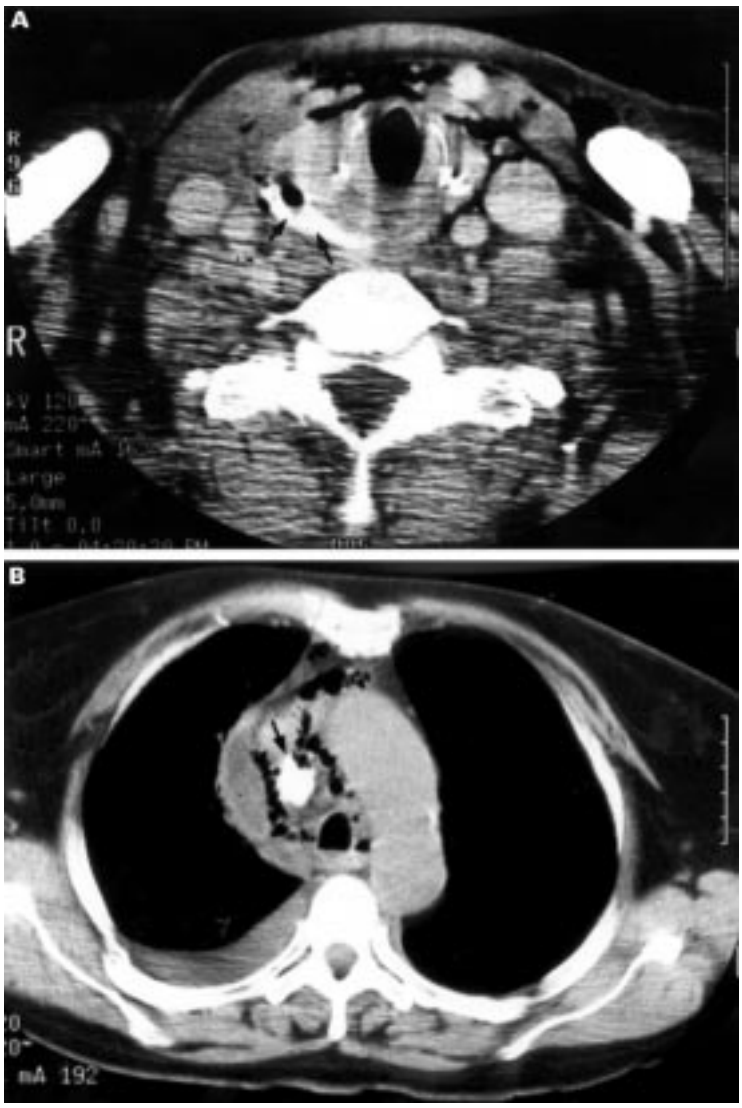

Figure 3 (A) CT scan with Gastrografin swallow at the level of the cricoid cartilage in case 5 showing extravasated contrast on the right side (arrow), diffuse inflammatory changes obscuring the soft tissue planes, and gas. (B) CT scan at the level of the aortic arch showing Gastrografin (arrow) that has tracked downward from the pharynx into the mediastinum, inflammatory changes, and gas in the mediastinal fat.

squamous cell histology. Panendoscopy failed to reveal a primary site of cancer. There was a small mucosal tear seen in the right oropharynx because of a difficult intubation. The patient then became febrile and a chest radiograph showed the presence of subcutaneous air in the neck and an infiltrate in the hilum of the right lung. Despite intravenous cefuroxime she continued to remain septic, though with normal swallowing and haemodynamics. The presence of septicaemia was confirmed with blood cultures and intravenous clindamycin was added.

An enhanced CT scan of the neck and chest with Gastrografin swallow was performed as a result of worsening subcutaneous emphysema (fig 3A and B). This showed evidence of perforation of the right pharynx with air and extravasated contrast in the neck and superior mediastinum. An urgent operation was necessary to establish adequate drainage of the neck sepsis. Despite this, there was progression of infection in the mediastinum as documented by a follow up CT scan five days later. She then required drainage of the mediastinum through right chest incision; pus was seen in the pretracheal, paratracheal, and prevascular spaces. The pleural space was adequately drained. She required ventilatory support for seven days, but recovered satisfactorily.

CASE REPORT 6

A 44 year old woman presented with a four day history of fever and progressive dysphagia, odynophagia, and neck swelling. She had been treated with oral penicillin for three days. A CT scan demonstrated extensive bilateral neck abscesses, with evidence of descending infection anterior to the trachea and in the left paratracheal area. The descending infection was identifiable to approximately 2 cm above the aortic arch.

Bilateral cervical drainage was carried out in the operating room. Drainage of the superior mediastinum was attempted through the neck incisions. Cultures were obtained and demonstrated *Bifidobacterium* and microaerophilic *Streptococcus*. The patient received intravenous vancomycin, metronidazole, and unasyn. Two days after the initial surgery her fever and neck swelling persisted so she underwent a second bilateral neck drainage with dressing changes. Two days later a CT scan demonstrated progression of the mediastinal infection to the subcarinal level; the patient returned to the operating room for right thoracotomy with drainage of the mediastinal pus and decortication of the right lung. A feeding jejunostomy tube was inserted. After this latter procedure the patient improved. The feeding jejunostomy tube was removed 14 days after the last mediastinal drainage procedure and she was discharged home at that time. The last follow up four months later confirmed a complete recovery.

CASE REPORT 7

A 46 year old man presented with a two week history of malaise and neck pain and a one week history of sore throat. On presentation he was complaining of dyspnoea and retrosternal chest pain. He was hypotensive, tachycardic, and tachypnoeic. He was hypoxic with a Po_2 of 110 mmHg despite being given 100% inspired O_2. His white blood cell count was 6000. He reported that he was taking gold and methotrexate for psoriatic arthritis, as well as a calcium channel blocker and diuretic for hypertension.

Chest radiography demonstrated a widened mediastinum and right pleural effusion. A CT scan showed a right parapharyngeal abscess with fluid and gas visible in the right superior mediastinum.

The patient underwent right thoracotomy and 500 ml of thin pus was drained from the mediastinum. Wide mediastinal debridement was carried out. At the same operation right neck exploration and drainage of the parapharyngeal abscess were performed. Three

Table 1 Single case reports[3–26]

Date	Author	Journal	Age	Sex	Drainage	Outcome
1970	Albertsen	*Arch Otolaryngol*	41	F	Neck	Home
1971	Janecka	*Arch Otolaryngol*	29	M	Neck	Death
1973	Cogan	*Oral Surg*	23	M	Neck and thorax	Death
1976	Enquist	*JAMA*	64	M	None	Home
1978	Scully	*NEJM*	59	F	Neck	Death
1978	Hendler	*J Oral Surg*	38	M	None	Death
1980	Strauss	*J Oral Surg*	23	M	Neck and thorax	Home
1980	Young	*J Thorac CV Surg*	27	M	Neck and thorax	Home
1983	Economopoulos	*Ann Thorac Surg*	25	M	Neck and thorax	Home
1983	Snow	*Arch Otolaryngol*	41	M	Neck	Death
1985	Bounds	*Br J Oral MF Surg*	48	M	Neck	Death
1987	Rubin	*J Oral MF Surg*	27	M	Neck	Death
1988	Zachariades	*J Oral MF Surg*	?	M	Neck and thorax	Home
1989	Musgrove	*Br J Oral MF Surg*	20	M	Neck	Home
1990	Horowitz	*Ann Thorac Surg*	57	M	Neck and thorax	Death
1990	Baker	*Br J Clin Pract*	56	M	Neck	Home
1990	Chong	*Thorax*	32	F	Neck	Home
1991	Guardia	*J Otolaryngol*	67	M	Neck	Death
1991	Seaman	*Am J Emerg Med*	26	F	Neck	Death
1992	Ogiso	*Oral Surg*	57	M	Neck	Death
1993	Civen	*Clin Infect Dis*	45	M	Neck	Home
1994	Watanabe	*Thorax*	21	M	Neck and thorax	Home
1995	Zeitoun	*J Oral MF Surg*	38	M	Neck	Death
1995	Jackson	*J Otolaryngol*	63	M	Neck	Home

Table 2 Series with 2–5 cases[27–34]

Date	Author	Journal	Age	Sex	Drainage	Outcome
1976	Howell	*Surg Gynecol Obstet*	23	M	Neck and thorax	Home
			44	M	Neck	Home
1978	Moncada	*Chest*	23	M	?	Home
			44	M	?	Home
			10	M	?	Home
			14	F	?	Home
			65	M	?	Home
1981	Wills	*Laryngoscope*	23	M	Neck and thorax	Home
			35	M	Neck and thorax	Home
			35	M	Neck	Death
1986	Levine	*Laryngoscope*	25	F	Neck	Home
			51	M	Neck	Home
			19	M	Neck	Home
			24	M	Neck	Death
			44	M	Neck	Death
1990	van der Brempt	*Eur Respir J*	17	F	Neck and thorax	Home
			49	M	Neck and thorax	Home
1990	Wheatley	*Ann Thorac Surg*	39	M	Neck and thorax	Home
			26	M	Neck and thorax	Home
1991	Garatea-Crelgo	*J Oral MF Surg*	18	F	Neck and thorax	Home
			32	M	Neck	Home
			64	M	Neck and thorax	Home
1991	Lalwani	*Head and Neck*	44	M	Neck and thorax	Home
			68	M	Neck and thorax	Home
			33	M	Neck	Home

chest tubes were inserted on the right and an irrigation system was established. A left chest tube was inserted and pus obtained.

Postoperatively the patient was admitted to the intensive care unit. He required adrenaline, noradrenaline, and dopamine infusions for pressure support. A Swan-Ganz catheter was inserted and documented septic cardiac indices. He was given intravenous gentamicin, clindamycin, and cefotaxime. The gentamicin was discontinued when he developed renal failure and *Streptococcus pyogenes* was cultured from the neck and chest.

Despite this management the patient continued to deteriorate, with erythema and brawny oedema spreading across the left neck and chest. One week after admission he underwent left thoracotomy and left neck drainage and an irrigation system was established on the left side.

The patient's course continued to be complicated by acute respiratory distress syndrome, acute renal failure requiring haemodialysis, hepatic failure and coagulopathy, and atrial fibrillation. He was weaned off inotropic drugs 20 days after admission to the ICU. He required a tracheostomy on day 21 and was weaned off ventilatory support 10 days later. He was discharged from the ICU 42 days after admission and is currently moving towards hospital discharge.

CASE REPORT 8

An 11 month old female infant presented with rapid onset of cough, abundant nasal discharge, and low grade fever in the preceding 24 hours. Sinus radiographs showed opacity of the ethmoid and maxillary sinuses bilaterally. On examination the child appeared well without fever but with copious nasal discharge. She was started on oral penicillin V and admitted. Throat swabs and auger suction were obtained.

Within hours of admission the patient developed a high fever (40°C), left sided neck swelling, and some nuchal rigidity. A lumbar puncture showed few leucocytes and no organisms on Gram staining. Intravenous penicillin G therapy was started. On the following day lateral neck radiographs showed a possible increase in the width of the retropharyngeal space. Otolaryngology consultation was obtained, and erythema of the posterior pharynx was observed. A deep seated neck infection was diagnosed and the patient was transferred to intensive care. Antibiotic coverage was changed to intravenous cloxacillin and ampicillin. The admission blood cultures showed *Staphylococcus aureus* and *Streptococcus pneumoniae*. Within 24 hours of conservative treatment the patient suffered a series of cardiac arrests and died.

Necroscopic examination showed pharyngeal and retropharyngeal cellulitis with no discrete abscess, bilateral purulent pleural effusions, a purulent pericarditis, and multiple lung abscesses. Bacteriology was positive for *S aureus* and *Streptococcus pyogenes*, both of which were resistant to ampicillin and penicillin.

Literature review and meta-analysis

We reviewed 36 English reports on adult descending necrotising mediastinitis comprising 69 patients. The articles were collected by performing a Medline search using the keyword "mediastinitis" from 1960 to 1995; each article which was flagged by the search was examined, and only articles in which the mediastinitis clearly arose from cervical pathology were entered into the meta-analysis. The following data were obtained from each article: author, journal, number of patients, patient age, sex, method of drainage (transcervical, transcervical plus transthoracic, or none), and survival outcome.

Single case reports (n = 24) made up the majority of the medical literature on descending necrotising mediastinitis, demonstrating the sporadic nature of the condition (table 1). There were eight series of 2–5 cases (table 2) and four series with more than five patients (table 3). Descending necrotising mediastinitis is predominantly a disease of young men; the average age of patients was 37.6 years, and the male to female ratio was approximately 6:1.

Table 3 Series with >5 cases[2 35 36]

Date	Author	Journal	Age	Sex	Drainage	Outcome
1983	Estrera	*Surg Gynecol Obstet*	37	M	Neck and thorax	Death
			20	M	Neck	Home
			25	M	Neck and thorax	Home
			22	M	Neck and thorax	Home
			31	M	Neck and thorax	Death
			40	F	Neck and thorax	Death
			27	M	Neck	Home
			32	M	Neck and thorax	Home
			21	F	Neck and thorax	Home
			26	M	Neck	Death
1993	Ruiz	*J Cran MF Surg*	32	M	Neck	Home
			60	M	Neck and thorax	Home
			54	M	Neck	Death
			24	M	Neck and thorax	Home
			17	M	Neck and thorax	Death
			56	M	Neck and thorax	Home
			28	M	Neck and thorax	Death
1994	Marty-Ane	*J Thorac CV Surg*	59	M	Neck and thorax	Death
			39	M	Neck and thorax	Home
			63	M	Neck and thorax	Home
			43	M	Neck and thorax	Home
			51	M	Neck and thorax	Home
			40	M	Neck and thorax	Home
1997	Corsten	*Thorax*	35	M	Neck and thorax	Home
			48	M	Neck and thorax	Home
			55	M	Neck and thorax	Home
			71	M	Neck	Home
			66	F	Neck and thorax	Home
			40	F	Neck and thorax	Home
			46	M	Neck and thorax	Home
			1	F	None	Death

Table 4 Comparison of mortality by method of surgical drainage

Method	Survivors	Deaths	Mortality
Neck alone	16	14	47%*
Neck and thorax	34	8	19%*

* $p<0.05$.

Most of the patients were in the 3rd to 5th decades of life. The overall mortality of 31% indicates the serious nature of the disease even in the antibiotic era.

Table 4 demonstrates the difference in mortality in patients who received neck and thoracic drainage (19%) compared with neck drainage alone (47%) ($p<0.05$).

Discussion

Knowledge of the fascial planes of the neck is important to the understanding of descending necrotising mediastinitis. Furstenberg and Yglesias have provided an excellent review of this topic.[37] There are four fascial spaces that involve both the neck and mediastinum – the carotid space, the retropharyngeal space, the danger space, and the prevertebral space. The distinction between the last three is often confused and is demonstrated in fig 4.

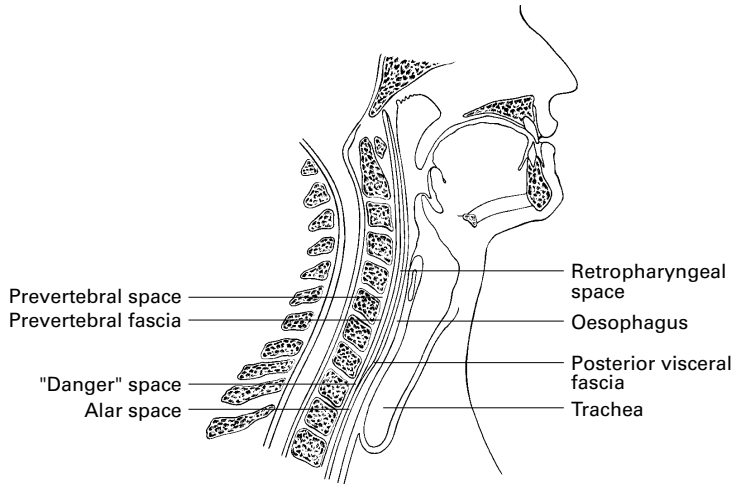

Figure 4 Lateral view of the fascial planes of the neck.

The prevertebral space is bounded anteriorly by the prevertebral fascia and posteriorly by the vertebral body. It is theoretically patent from the skull base to the coccyx; Last, however, notes that infection must penetrate the fascia to descend below the third thoracic vertebra.[38] The retropharyngeal space is bounded anteriorly by the posterior visceral fascia and posteriorly by the alar fascia. It is only contiguous until the T1/T2 level where these two fasciae fuse. The most important route of descending infection is the danger space, lying between the alar and prevertebral fasciae. It is patent from the skull base to the diaphragm.

Findings on the plain radiograph are often subtle in descending necrotising mediastinitis. A lateral radiograph of the soft tissue of the neck usually shows widening of the precervical and retropharyngeal soft tissues, occasionally with abnormal collections of gas. Chest radiographs may demonstrate subtle widening of the paratracheal soft tissues in the mediastinum. Soft tissue thickening at the level of the thoracic inlet causing anterior bulging of the posterior wall of the trachea may be seen on the lateral chest radiograph. Bilateral pleural effusions and lower lobe consolidation or atelectasis are commonly seen.

CT scanning should be performed early as it may identify mediastinitis at a time when chest radiographs are still normal or indeterminate. CT scanning is required for optimal assessment of the extent of abscess formation in the neck and its contiguous spread into the mediastinum. The size and location of mediastinal fluid collections, pericardial effusion, pneumonia, and empyema are well demonstrated. A CT scan may reveal the presence of gas in the abscesses not detectable on plain radiographs. Follow up CT scans are useful to evaluate the adequacy of surgical drainage in the neck and mediastinum and may identify undrained or recurrent abscesses.[39]

In case 1 it was obvious that the patient recovered only after thoracotomy and adequate drainage of the mediastinum. Cases 2, 3, 5, 6, and 7 likewise demonstrated to us the benefit of proper drainage of the infected mediastinum. The opinion has been stated in the literature, by Marty-Ane and Wheatley in particular, that surgical drainage of the neck and mediastinum should be considered the standard care for these patients. Our experience supports this view. We reviewed the case reports with respect to the method of surgical drainage in an attempt to examine this hypothesis. The difference in mortality in patients who received neck and thoracic drainage (19%) compared with neck drainage alone (47%) was significant ($p<0.05$). This marked difference in survival is especially important as many patients who underwent thoracic drainage did so only after failure of more conservative treatment, with ongoing

mediastinal sepsis and often cardiac and respiratory complications. These were very often the more ill patients and yet had a statistically significant decrease in mortality when compared with patients who had neck drainage alone. We feel there is considerable evidence to support the use of early thoracotomy in adult descending necrotising mediastinitis.

We are of the opinion that the mediastinum cannot be adequately drained by a limited surgical approach through subxiphoid or anterior mediastinotomy. All the survivors had the mediastinal sepsis best controlled by formal thoracotomy.

The use of hyperbaric oxygen in the treatment of this disease is controversial. While this may indeed have a role, it should not be used to the exclusion of surgical debridement.

Descending necrotising mediastinitis is a rare but serious infection which begins in the neck and spreads rapidly downward to the mediastinum. The best treatment is a combination of adequate drainage of the neck and mediastinum and intravenous broad spectrum antibiotics.

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