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· 临床研究 ·

负压封闭引流术治疗牙源性颌面-颈部-纵膈感染5例临床分析

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【摘要】 **目的**　探讨应用负压封闭引流(vacuum sealing drainage，VSD)术治疗颌面-颈部-纵隔多间隙感染的临床疗效。**方法**　5例由牙源性感染导致的颌面-颈部-纵隔多间隙感染，同时伴有糖尿病或肾功能衰竭等全身疾病的患者，在手术广泛清创后采用VSD于脓腔放置负压引流海绵并关闭伤口，术后持续负压引流；同时多学科会诊控制基础性疾病，加强抗炎、营养等全身治疗。**结果**　4例患者经过持续负压引流，症状消退后成功拔除负压海绵。1例患者术后感染症状加重，再次手术更换负压海绵放置位置后感染症状逐渐消失。5例患者治疗期间均进行了1～3次不等的VSD负压海绵更换，经抗炎及治疗全身基础性疾病，术后均治愈出院。**结论**　对于牙源性颌面颈部纵隔多间隙感染，强调局部治疗与全身治疗、感染病灶与基础病治疗并重，VSD术促进了炎症消退，多学科联合治疗有益于控制基础性疾病。

【关键词】 牙源性感染；　颌面颈部；　多间隙感染；　纵膈脓肿；　负压封闭引流技术；　糖尿病；　肾功能衰竭；　多学科联合治疗

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Clinical analysis of 5 cases of odontogenic maxillofacial-neck-mediastinal infection treated with negative pressure sealing drainage

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【Abstract】 **Objective**　To explore the effect of negative pressure sealing drainage on the treatment of maxillofacial-neck-mediastinal infection in multiple spaces. **Methods**　Vacuum sealing drainage (VSD) was applied in five patients with maxillofacial-neck-mediastinal infection caused by odontogenic infection accompanied by diabetes or renal failure and other systemic diseases. After extensive debridement, a negative pressure drainage sponge was placed in the pus cavity and then the wound was closed. Continuous negative pressure drainage was continued after the operation. At the same time, multidisciplinary consultation was applied to control basic diseases and, strengthen anti-inflammatory responses, and nutrition and other systemic treatments were applied. **Results**　Four patients underwent continuous negative pressure drainage and successful removal of the negative pressure sponge after inflammatory symptoms subsided. One patient's inflammatory symptoms became more serious after the operation, and we performed another operation to change the placement of the negative pressure sponge. All 5 patients underwent VSD with negative pressure sponge replacement ranging from 1 to 3 times during treatment. After multidisciplinary consultation, they were all cured and discharged from the hospital. **Conclusion**　For infection of the mediastinum, maxillofacial region and neck, local treat-

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ment and systemic treatment are emphasized, as well as the treatment of infected lesions and basic diseases. Negative pressure closure and drainage technology promotes the alleviation of inflammation, and multidisciplinary combined treatment is beneficial for the control of basic diseases.

【Key words】 odontogenic infection; maxillofacial and neck; multi-space infection; mediastinal abscess; vacuum sealing drainage; diabetes; kidney failure; multidisciplinary combination therapy

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口腔颌面部间隙感染常见原因有智齿冠周炎、根尖周炎、颌骨骨髓炎、淋巴结炎、面部疖痈等。若不能得到有效的救治,特别是少数合并糖尿病等基础疾病患者,容易引起脓毒血症、败血症等并发症,甚至危及生命[1]。并发纵膈脓肿,预后极差。2017年1月～2019年12月佛山市中医院口腔颌面外科收治了5例由牙源性感染引起颌面颈部纵隔脓肿伴有全身基础性疾病的患者,采用负压封闭引流(vacuum sealing drainage,VSD)代替常规引流管引流,多学科会诊治疗基础性疾病,救治成功,痊愈出院,现报告如下。

1　资料和方法

1.1　一般资料

5例患者均由口腔科医生首诊,男性4例,女性1例,年龄32～75岁,平均(58.6 ± 17.4)岁,感染来源3例为智齿冠周炎,2例为根尖周炎。感染部位包括舌下、颏下、颌下间隙、口底、颈部、纵膈间隙。患者临床表现均有:呼吸、吞咽困难,颌面颈胸部对应区域皮肤潮红、发热、心率增快。5例患者中4例伴有糖尿病,1例肾衰长期透析。

1.2　治疗方法

5例患者入院后均急诊手术治疗。在支气管纤维镜引导下气管插管,全身麻醉后实施多学科联合手术治疗。口腔颌面外科行口底颌面颈部多间隙感染广泛切开引术等。胸外科同期行纵膈脓肿引流手术。手术过程中将颌面部、颈部各个感染间隙充分分离,术中将不同位置脓液做三合一细菌培养,用1%聚维酮碘和生理盐水冲洗腔面。根据创面深度将VSD海绵在不同部位置入。固定引流管,另一端回病房后持续接负压引流。根据术中脓肿渗出的颜色、气味等信息可大致判断出致病菌,第一时间经验用药抗炎治疗。并请内分泌科、肾病科等学科医生协同诊治基础疾病,动态评估感染程度,防治严重的并发症。

1.3　评价指标

伤口肿胀消退无渗液,体温正常,全身无感染症状,复测白细胞指标恢复正常为治愈。

2　结　果

细菌培养结果见表1。4例经过持续负压引流至肿胀、疼痛消退,感染指标恢复正常后,成功拔除负压引流。1例患者术后感染症状加重,再次手术后感染症状逐渐消失。5例患者均进行了1次到3次不等的VSD海绵更换。所有患者术后均治愈出院,住院时间17～35 d,平均(18.6 ±4.3)d。

表1　5例牙源性颌面-颈部-纵膈脓肿治疗与预后

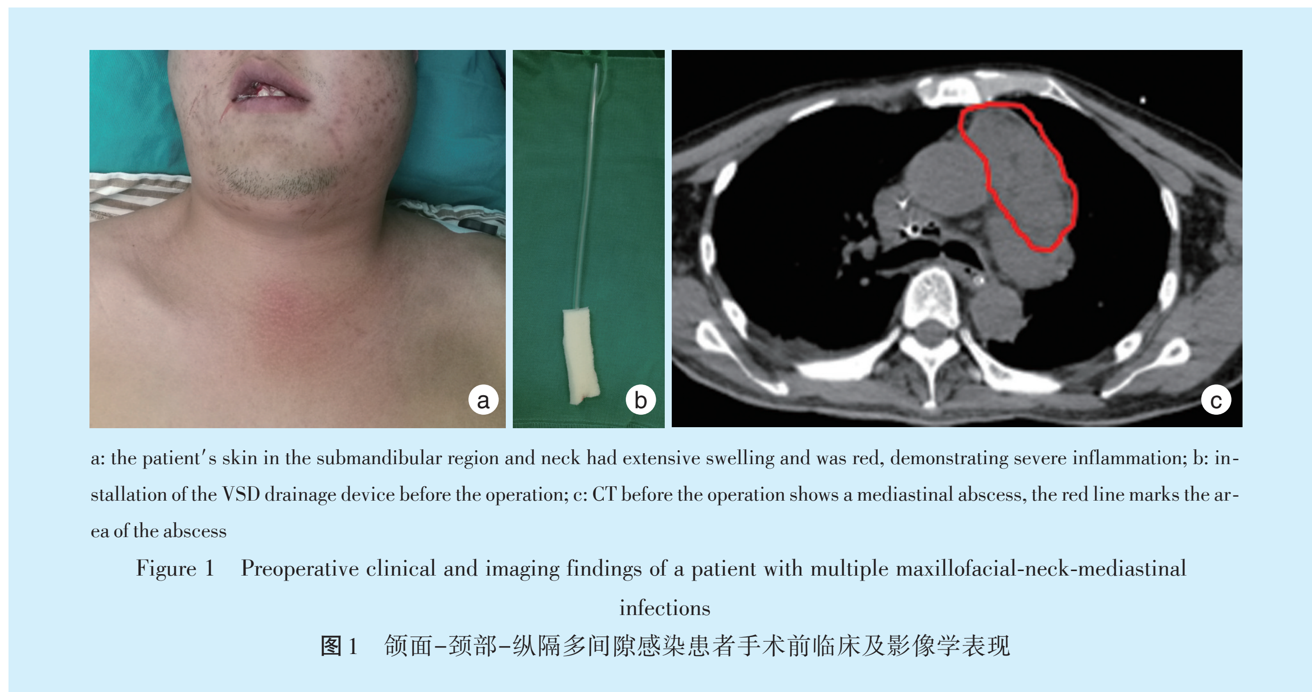
Table 1　Treatment and prognosis of maxillofacial-neck-mediastinal infection caused by odontogenous infection in 5 cases

No	Gender	Age	WBC (× 10^9/L)	Drug sensitivity results	Blood glucose (mmol / L)	Infection	Medication	Complication	Results
1	Female	54	19.8	Mixed bacteria	16.5	38 Peri-coronitis	Penicillin+metronidazole	Renal failure	Rehabilitation
2	Male	73	18.3	Mixed bacteria	21.3	46 Apical inflammation	Penicillin+metronidazole	No	Rehabilitation
3	Male	59	13.4	*Hemolytic Streptococcus*	18.4	48 Peri-coronitis	Penicillin	No	Rehabilitation
4	Male	32	21.3	Mixed bacteria	28.6	38 Peri-coronitis	Penicillin+metronidazole	Hypoalbuminemia	Rehabilitation
5	Male	75	8.7	*Staphylococcus*	6.1	46 Apical inflammation	Penicillin	No	Rehabilitation

3　典型病例

王某,男,32岁,因左下颌智齿疼痛2周伴左颈部胀痛3天于2018年1月5日入院。患者2周前出现左侧下颌智齿疼痛,自行口服抗炎药物,未见好转,3天前因左颈部肿痛伴发热来诊,表现为寒战、高热、烦躁不安,诉胸骨后疼痛,深呼吸或咳嗽时加重。既往有糖尿病史。全身检查:患者呼吸急促,为32 次/min,心率加快,为131

次/min，中毒症状明显。左侧口底皮肤黏膜肿胀，舌体上抬；锁骨上区肿胀，可触及皮下捻发音。CT检查示：口底颈部纵膈多间隙感染伴脓肿形成、气体产生(图1)。血常规检查：白细胞计数21.3 × 10^9个/L，血糖28.6 mmol/L；白蛋白26 g/L。



a: the patient's skin in the submandibular region and neck had extensive swelling and was red, demonstrating severe inflammation; b: installation of the VSD drainage device before the operation; c: CT before the operation shows a mediastinal abscess, the red line marks the area of the abscess

Figure 1　Preoperative clinical and imaging findings of a patient with multiple maxillofacial-neck-mediastinal infections

图1　颌面-颈部-纵隔多间隙感染患者手术前临床及影像学表现

诊断：①口底颈部纵膈多间隙感染伴脓肿形成；②2型糖尿病；③低白蛋白血症。

完善检查后即送手术室全麻行口底颈部纵隔多间隙清创术+VSD(图2)。

a: the patient underwent extensive incision and debridement through surgery; b: the VSD negative pressure drainage device was placed in the submandibular region, neck region and upper mediastinum after the operation

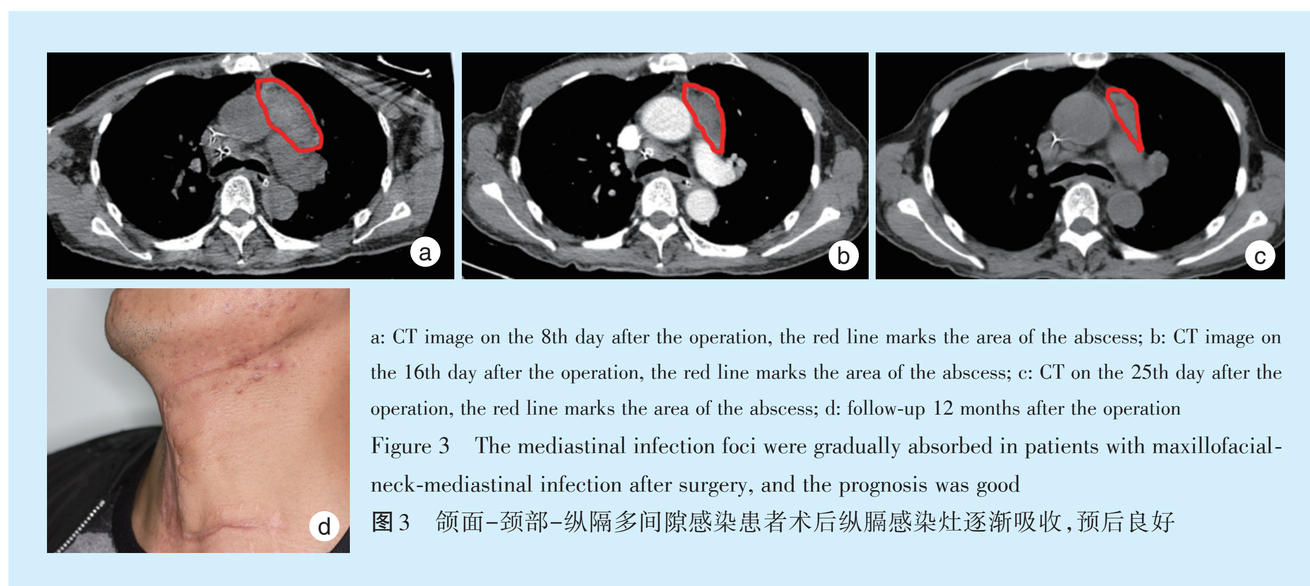
Figure 2　Patients with multiple maxillofacial-neck - mediastinal infections who underwents incision, drainage and VSD placement

图2　颌面-颈部-纵隔多间隙感染患者切开引流，安置VSD

术后口腔颌面外科与胸外科共同换药治疗，给予持续颌下颈部纵膈200 kPa负压吸引，生理盐水持续冲洗伤口；同期给予抗感染、补充白蛋白、维持电解质平衡及控制血糖对症治疗。术后2周拔除颌面颈部引流，1个月患者拔除纵隔引流，逐步停抗生素。复查血常规及肝肾功能基本正常(图3)。

4　讨　论

面颈部蜂窝织炎常常引起患者呼吸道梗阻、脓毒血症、败血症、海绵窦血栓性静脉炎、脑脓肿、纵膈脓肿等并发症，危及生命，特别是纵膈脓肿临床较少见，病情危急。纵膈位于躯干中心，向上与颈部间隙想通，当颈部脓肿时炎症容易在间隙内向下扩散引起纵膈感染，一旦发生引流困难，感染后容易引起中毒性休克、心功衰竭。1983年Estrera等将颈部感染经颈深筋膜间隙下行引起的纵膈坏死性蜂窝织炎称为下行性坏死性纵膈炎(descending necrotizing mediastinistis，DNM)，临床表现为寒战、高热、烦躁不安，主诉胸骨后剧烈疼痛，深呼吸或咳嗽加重，治疗不当可导致脓胸、脓气胸



a: CT image on the 8th day after the operation, the red line marks the area of the abscess; b: CT image on the 16th day after the operation, the red line marks the area of the abscess; c: CT on the 25th day after the operation, the red line marks the area of the abscess; d: follow-up 12 months after the operation

Figure 3　The mediastinal infection foci were gradually absorbed in patients with maxillofacial-neck-mediastinal infection after surgery, and the prognosis was good

图3　颌面-颈部-纵隔多间隙感染患者术后纵膈感染灶逐渐吸收，预后良好

等，临床罕见，预后差。牙源性感染是颌面部感染最为常见的感染来源，占90%以上[2]，感染来源有智齿冠周炎[3]、根尖周炎(66.7%)[4]。而老年患者的感染扩散速度明显高于年轻人，需要特别重视[5]。口腔颌面部感染继发的纵隔脓肿感染，有报道发生率约为1.98%，死亡率为20%～60%[6]。其他影响发病因素包括口腔卫生不良、自我不规范使用抗生素，患牙延迟就医等[7]。

口腔颌面脓肿传统治疗方法是手术切开排脓后，在患者引流口放置引流装置让炎症渗出自然引流出，每日换药观察引流是否通畅、引流物颜色、评估引流量，并冲洗换药。其缺点是被动引流，时常引起脓腔局部渗出物积聚，反而促进细菌生长，甚至加重病情。VSD的出现弥补了传统引流的不足，该技术由德国Ulm大学的Wim F1eischmann博士于20世纪90年代初发明，裘华德教授于1994年引进并和他的同事陈务民等进行了发展和改良[8]。较传统引流技术，VSD优点如下：冲洗简便和引流的高效性；缩短治疗时间，减少抗生素全身用量；避免了感染、创伤后死腔形成；持续负压引流避免了频繁换药，方便护理。本组5例患者均采用VSD，视脓腔位置放置于口底颌下、颈部、纵膈区，冲洗管持续冲洗，中心负压持续吸引，避免了每日换药，大大减少了医护的工作量，加上红外线理疗、复方黄水等中医中药元素，患者均顺利康复。复方黄水为佛山市中医院研制的制剂，患者术后外敷于伤口加速康复，其成分包括黄连、冰片等，黄连具有清热解毒燥湿泻火功效，冰片有清热止痛解毒消肿功效。早期彻底清创，广泛切开清除坏死组织是降低死亡率的关键因素[9]，口腔颌面颈部纵膈感染需要多学科共同参与、快速响应，包括口腔颌面外科、普外科、胸外科、耳鼻喉科、麻醉科、血液科、ICU、基础疾病相关的科室等。本组患者接诊并确诊后笔者所在医院均开通绿色通道，请相关科室会诊共同手术治疗，手术方案包括颌下颈部纵膈的广泛切开，使颌下颈部纵膈形成的脓肿腔隙相互贯通，清创、清除坏死组织，于腔隙放置合适的VSD装置，较以前传统放置碘纺纱相比，负压引流更利于坏死组织及时引流。

抗生素选择是治疗口腔颌面颈部纵膈感染重要手段之一[10]，不同细菌有不同表现：金黄色葡萄球菌感染表现为脓液稠厚、黄色、无臭味；链球菌感染表现为脓液稀薄，淡红色、容易被人体吸收形成败血症[2]；变形杆菌感染则有特殊恶臭味等等。颌面-颈部-纵膈感染的病原菌多为包含厌氧菌、需氧菌的混合感染，链球菌、金黄色葡萄球菌是最常见到的分离菌[11]。而经验用药有不同观点：Heim等[12]认为青霉素仍然是一种抗链球菌、C群链球菌和普氏菌的高效抗生素，而克林霉素作为一种经验性药物，对多数的牙源性感染并不十分有效，推荐青霉素+甲硝唑联合用药。Bhagania等[13]认为克林霉素和青霉素联合甲硝唑是治疗口腔颌面部严重牙源性感染的有效药物方案。克林霉素治疗可缩短住院时间，降低净治疗费用，成功率高。Zirk等[14]认为头孢菌素也可作为治疗的另一种选择。需要指出，颌面-颈部-纵膈感染大多属于混合感染。临床医生需要结合患者病史、临床表现、脓液情况及经验抗生素是否有效综合判断。本研究5例

患者2例选择单药青霉素，3例选用青霉素加甲硝唑联用，均取得了良好效果。

此外，口腔颌面颈部纵膈脓肿感染也应重视治疗基础疾病。常见的如糖尿病患者，感染使患者处于应激状态，造成血糖升高，而高血糖又进一步加重感染。因此，控制感染和控制血糖同等重要，在此基础上再进行有效的抗感染治疗，并应根据药敏结果及时调整抗菌素的种类，会使糖尿病患者合并感染得到有效控制[15-17]。

感染引起的肾功能衰竭与其他原因导致的肾衰不同，主要措施是积极治疗感染的原发病，包括各部位的脓肿的清创、患牙及时拔除等。另外，肾衰并发症应积极处理，包括低白蛋白败血症、贫血、脓毒血症等。

综上，严重颌面-颈部-纵膈间隙感染患者，强调局部治疗与全身治疗、感染病灶与基础病治疗并重，VSD缩短了住院时间，提高了治疗效果，多学科会诊协助治疗全身基础性疾病有利于病情的康复。

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