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**METHODS FOR ORGANIZING TREATMENT AND REHABILITATION OF PATIENTS WITH
PURULENT-NECROTIC COMPLICATIONS OF THE MAXILLOFACIAL REGION IN SYSTEMIC
VASCULITIS**

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Abstract. Background. Purulent-necrotic maxillofacial lesions in ANCA-associated vasculitis may result from ischemia, destructive inflammation, secondary infection and treatment-related immunosuppression.

Objective. To develop a consistent model for organizing diagnosis, treatment and rehabilitation.

Materials and methods. A clinical-organizational analysis included 104 patients: 46 with granulomatosis with polyangiitis (GPA), 32 with microscopic polyangiitis (MPA), and 26 with eosinophilic granulomatosis with polyangiitis (EGPA). Patient routing, differentiation of vasculitis activity from infection, source-control timing and rehabilitation stages were evaluated.

Results. GPA constituted 44.2%, MPA 30.8% and EGPA 25.0% of the cohort. Five mandatory decision points were identified: emergency assessment, parallel local and systemic diagnostics, microbiological and histological verification, multidisciplinary treatment selection, and staged rehabilitation. A four-stage pathway was formulated: emergency stabilization, acute control, wound stabilization, and delayed functional-reconstructive rehabilitation.

Conclusion. Management should combine urgent safety measures, tissue-preserving source control, coordinated systemic therapy and rehabilitation after infection control and stable remission.

Keywords: systemic vasculitis, granulomatosis with polyangiitis, microscopic polyangiitis, eosinophilic granulomatosis with polyangiitis, maxillofacial infection, necrosis, rehabilitation.

Annotatsiya. Dolzarbligi. ANCA bilan bog'liq tizimli vaskulitlarda yuz-jag' sohasining yiringli-nekrotik shikastlanishlari to'qimalar ishemiyasi, destruktiv yallig'lanish, ikkilamchi infeksiya hamda davolash bilan bog'liq immunosupressiya ta'sirida rivojlanishi mumkin.

Tadqiqot maqsadi. Yuz-jag' sohasining yiringli-nekrotik asoratlari mavjud bemorlarda tashxislash, davolash va reabilitatsiya jarayonlarini izchil tashkil etish modelini ishlab chiqish.

Materiallar va usullar. Klinik-tashkiliy tahlilga 104 nafar bemor jalb qilindi. Ulardan 46 nafari poliangiitli granulematoz, 32 nafari mikroskopik poliangiit va 26 nafari eozinofil poliangiitli granulematoz bilan kasallangan edi. Bemorlarni tibbiy yordam bosqichlari bo'yicha yo'naltirish, vaskulit faolligini infeksiyon jarayondan differensial tashxislash, yiringli o'choqni nazorat qilish muddatlari hamda reabilitatsiya bosqichlari baholandi.

Natijalar. Tadqiqot guruhida poliangiitli granulematoz 44,2%, mikroskopik poliangiit 30,8% va eozinofil poliangiitli granulematoz 25,0% ni tashkil etdi. Davolash-tashxislash jarayonining beshta majburiy qaror qabul qilish bosqichi belgilandi: shoshilinch holatni baholash, mahalliy va tizimli diagnostikani parallel amalga oshirish, mikrobiologik va gistologik verifikatsiya, multidisiplinar davolash taktikasini tanlash hamda bosqichma-bosqich reabilitatsiya. To'rt bosqichli davolash-reabilitatsiya yo'li ishlab chiqildi: shoshilinch barqarorlashtirish, o'tkir jarayonni nazorat qilish, yara holatini barqarorlashtirish va kechiktirilgan funksional-rekonstruktiv reabilitatsiya.

Xulosa. Tizimli vaskulitlarda yuz-jag' sohasining yiringli-nekrotik asoratlarini boshqarish shoshilinch xavfsizlik choralari, to'qimalarni maksimal saqlovchi yiringli o'choq sanatsiyasini, muvofiqlashtirilgan tizimli davolashni hamda infeksiyon jarayon nazoratga olinib, barqaror remissiyaga erishilgandan keyingi reabilitatsiyani o'z ichiga olishi lozim.

Kalit so'zlar: tizimli vaskulit, poliangiitli granulematoz, mikroskopik poliangiit, eozinofil poliangiitli granulematoz, yuz-jag' sohasi infeksiyasi, nekroz, reabilitatsiya.

Аннотация. Актуальность. Гнойно-некротические поражения челюстно-лицевой области при ANCA-ассоциированных системных васкулитах могут развиваться вследствие ишемии тканей, деструктивного воспаления, вторичной инфекции и иммуносупрессии, связанной с проводимым лечением.

Цель исследования. Разработать последовательную модель организации диагностики, лечения и реабилитации пациентов с гнойно-некротическими осложнениями челюстно-лицевой области.

Материалы и методы. В клинко-организационный анализ включены 104 пациента: 46 больных гранулематозом с полиангиитом, 32 пациента с микроскопическим полиангиитом и 26 больных эозинофильным гранулематозом с полиангиитом. Оценивали маршрутизацию пациентов, дифференциальную диагностику активности васкулита и инфекционного процесса, сроки санации гнойного очага и этапы реабилитации.

Результаты. Гранулематоз с полиангиитом составил 44,2%, микроскопический полиангиит — 30,8%, эозинофильный гранулематоз с полиангиитом — 25,0% всей когорты. Определены пять обязательных этапов принятия клинических решений: экстренная оценка состояния, параллельная местная и системная диагностика, микробиологическая и гистологическая верификация, выбор мультидисциплинарной лечебной тактики и поэтапная реабилитация. Сформирован четырёхэтапный лечебно-реабилитационный маршрут: экстренная стабилизация, контроль острого процесса, стабилизация раны и отсроченная функционально-реконструктивная реабилитация.

Заключение. Ведение пациентов с гнойно-некротическими осложнениями челюстно-лицевой области при системных васкулитах должно сочетать неотложные меры безопасности, тканесберегающую санацию гнойного очага, координированную системную терапию и реабилитацию после контроля инфекционного процесса и достижения стойкой ремиссии.

Ключевые слова: системный васкулит, гранулематоз с полиангиитом, микроскопический полиангиит, эозинофильный гранулематоз с полиангиитом, инфекция челюстно-лицевой области, nekroz, реабилитация.

Introduction. Antineutrophil cytoplasmic antibody-associated vasculitis (AAV) includes GPA, MPA and EGPA. These disorders share necrotizing small-vessel vasculitis but differ in granulomatous inflammation, eosinophilic biology and organ distribution. Current EULAR and ACR/Vasculitis Foundation recommendations emphasize rapid recognition of organ-threatening disease, exclusion of infection and individualized multidisciplinary management [1, 3]. The 2022 ACR/EULAR criteria provide standardized research classification for the three phenotypes [4, 6].

Maxillofacial complications arise when vascular ischemia, destructive inflammation, odontogenic or sinonasal infection and immunosuppressive treatment interact. They may present as mucosal ulceration, necrotizing gingivitis, palatal or sinonasal defects, jaw osteitis or osteomyelitis, deep-space phlegmon, fistulae and delayed healing. Orofacial manifestations are best documented in GPA, including "strawberry gingivitis", ulceration, tongue necrosis and palatal perforation [7, 8].

The main diagnostic challenge is to distinguish active vasculitis from secondary infection. Treating every necrotic lesion as infection may lead to excessive surgery, while attributing purulent swelling to vasculitis may delay drainage. Correct organization therefore requires parallel assessment by maxillofacial surgery, dentistry, rheumatology and infectious diseases, with organ-specific specialists involved when necessary [1, 2, 9, 10].

Objective. To substantiate a structured clinical-organizational model for diagnosis, treatment and rehabilitation of purulent-necrotic maxillofacial complications in systemic vasculitis, based on a cohort of 104 patients with GPA, MPA and EGPA. The working hypothesis was that treatment safety depends on the sequence of decisions: emergency stabilization, etiological verification, source control, coordinated systemic therapy, wound stabilization and only then definitive rehabilitation.

Materials and methods. The clinical-organizational analysis included 104 patients with systemic vasculitis and purulent-necrotic maxillofacial complications: 46 with GPA, 32 with MPA and 26 with EGPA. The study evaluated the completeness and sequence of care rather than the efficacy of individual drugs. Diagnostic classification was reviewed using accepted clinical, serological, imaging and histopathological principles [4, 6].

Local assessment comprised extraoral and intraoral examination, identification of odontogenic sources, evaluation of necrosis, exposed bone, fistulae and deep-space spread, and CT/CBCT or contrast imaging when indicated. Deep-tissue material was prioritized for microbiology; histology was used when active vasculitis, invasive infection or another destructive process required differentiation. Systemic assessment included renal, pulmonary, eosinophilic and inflammatory status, bleeding risk and current immunosuppression.

Table 1. Structure of the cohort and key organizational priorities

Group	n	%	Key priority
GPA	46	44.2	Destructive sinonasal/oral disease; distinguish active granulomatous inflammation from secondary infection.
MPA	32	30.8	Renal-pulmonary risk, bleeding and metabolic assessment before surgery.
EGPA	26	25.0	Eosinophilic inflammation, asthma and cardiopulmonary risk.
Total	104	100.0	Unified triage, verification, multidisciplinary care and rehabilitation.

Emergency source control was not delayed in airway compromise, sepsis, rapidly spreading infection, uncontrolled bleeding, orbital involvement or neurological signs. Non-urgent extensive surgery was deferred until infection and systemic activity were clarified.

Results. The analysis included 104 patients with systemic vasculitis and purulent-necrotic maxillofacial complications: 46 patients with granulomatosis with polyangiitis (GPA; 44.2%), 32 with microscopic polyangiitis (MPA; 30.8%), and 26 with eosinophilic granulomatosis with polyangiitis (EGPA; 25.0%). GPA exceeded MPA by 14 cases and EGPA by 20 cases, while GPA and MPA together accounted for 75.0% of the cohort. The distribution supported a unified emergency and infection-safety route with disease-specific branches for diagnostic verification, perioperative risk assessment, systemic treatment coordination, and rehabilitation.

In GPA, the principal task was to differentiate active granulomatous destruction from secondary odontogenic, sinonasal, or deep-space infection in patients with ulceration, exposed bone, fistulae, or palatal defects. MPA required focused assessment of renal-pulmonary involvement, anemia, metabolic disturbances, and bleeding risk before invasive treatment. In EGPA, eosinophilic activity, asthma control, neuropathic manifestations, and possible

cardiopulmonary risk were incorporated into the preoperative plan. These priorities refined the unified multidisciplinary protocol without fragmenting patient routing.

Five obligatory decisions were defined: immediate recognition of airway compromise, sepsis, uncontrolled bleeding, orbital involvement, or neurological signs; parallel local and systemic assessment; microbiological and histological verification; a documented multidisciplinary decision on source control and systemic therapy; and early rehabilitation planning. Culture findings were interpreted together with imaging, histology, tissue viability, organ involvement, and current immunosuppression. This approach reduced both unjustified radical surgery for vasculitic necrosis and delayed drainage of concealed odontogenic infection, osteomyelitis, or deep-space suppuration.

Treatment followed the principle “stabilize, verify, preserve, and reconstruct later.” Emergency drainage or limited debridement was prioritized when infection threatened life, the airway, vision, neurological function, or systemic stability. Deep samples were obtained before antimicrobial therapy whenever feasible. Clearly non-viable tissue was removed, while wide resection of tissue with uncertain viability was deferred during active inflammation.

Coordination of systemic and anti-infective treatment. Antimicrobial therapy was adjusted to microbiological findings, the anatomical source, organ function, and clinically relevant drug interactions. Immunosuppression was modified only through coordinated decisions with rheumatology and relevant organ specialists. Elective closure, grafting, implantation, and major reconstruction were postponed until infection control, resolution of systemic toxicity, and stable remission.

Table 2. Stage-based organization of treatment and rehabilitation

Stage	Main tasks	Team	Transition criterion
I. Emergency	Airway/sepsis assessment; urgent imaging; drainage or limited debridement; deep sampling.	Surgery, anesthesia, infectious diseases.	Stable airway and circulation; source control initiated.
II. Acute control	Culture-guided therapy; coordinated vasculitis treatment; organ support; serial review.	Rheumatology, surgery, infectious diseases, organ specialists.	No systemic toxicity or progressive local spread.
III. Wound stabilization	Atraumatic oral care; selective debridement; nutrition, pain, and mobility support.	Surgery, dentistry, nursing, nutrition.	Clean stable wound; no progressive necrosis.
IV. Rehabilitation	Jaw, speech, and swallowing rehabilitation; dental planning; delayed reconstruction.	Rehabilitation, dentistry, prosthodontics, reconstructive surgery.	Controlled infection and stable remission.

Emergency stabilization ended after airway and circulation were secured and source control had begun. Acute control continued until systemic toxicity and progressive local spread resolved. Wound stabilization required a clean, non-progressive defect. Rehabilitation and definitive reconstruction were initiated only after controlled infection and stable remission.

Early functional rehabilitation. Rehabilitation began during acute care with atraumatic oral hygiene, analgesia, nutritional assessment, hydration, and prevention of prolonged mandibular immobilization. Gentle jaw-mobility exercises were introduced after uncontrolled bleeding, severe pain, and spreading infection had subsided. Functional assessment included mouth opening, mastication, swallowing, speech, lip competence, oral-nasal separation, and dental support.

Temporary obturators or protective appliances could support swallowing and articulation, but pressure on ischemic tissue was avoided. Dental sanitation eliminated active odontogenic sources while preserving strategic teeth whenever possible. Definitive prosthodontic or reconstructive treatment required absence of progressive infection, stable vasculitis, and clear demarcation of the residual defect.

Figure 1. Stage-based treatment and rehabilitation pathway

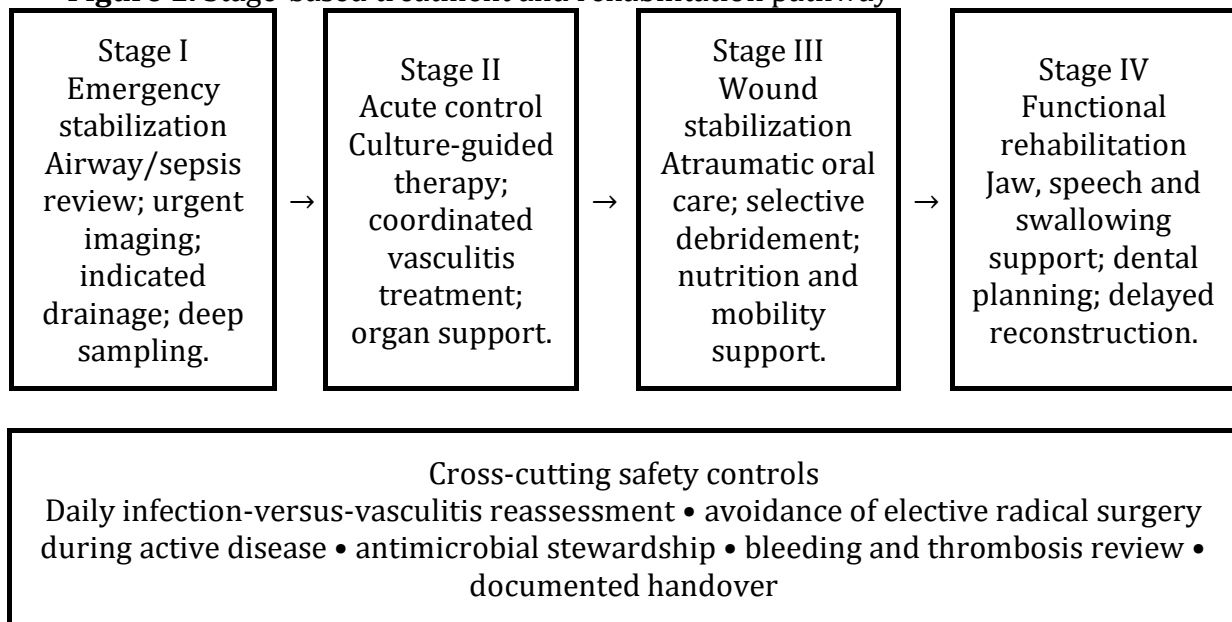


Figure 1. Stage-based treatment and rehabilitation pathway for purulent-necrotic maxillofacial complications in systemic vasculitis.

Follow-up combined wound and dental review with surveillance for vasculitis relapse, recurrent infection, organ involvement, and treatment toxicity. A shared plan defined responsibility, reassessment, and referral for speech, swallowing, prosthodontic, or reconstructive care. The analysis produced a reproducible pathway of five decision points and four treatment-rehabilitation stages; unsupported efficacy percentages were not added because verified longitudinal functional scores were unavailable.

Discussion. The proposed model addresses the central paradox of purulent-necrotic maxillofacial disease in systemic vasculitis: the patient may simultaneously require immunosuppression for vascular inflammation and anti-infective or surgical treatment for secondary infection. Current guidelines support severity-based systemic therapy and active exclusion of infectious mimics. In the maxillofacial region, visible necrosis does not reliably identify the dominant mechanism.

GPA constituted 44.2% of the cohort, consistent with its recognized upper-airway and orofacial spectrum. Systematic reviews describe gingival enlargement, ulcers, necrosis, palatal perforation and destructive sinonasal disease. Histology may be focal or nonspecific, so biopsy findings should be correlated with clinical and radiological data. MPA requires special attention to renal-pulmonary disease, bleeding and metabolic risk. EGPA adds asthma, eosinophilia, neuropathy and possible cardiac involvement, all of which can alter anesthetic and rehabilitation decisions.

The staged pathway limits unnecessary radical surgery. Ischemic tissue may recover after systemic control, whereas deep infection can progress despite immunosuppression. Destructive GPA with superimposed skull-base osteomyelitis illustrates the danger of assuming a single cause [10]. Rapid parallel verification and urgent source control are therefore required when safety is threatened.

Rehabilitation is not secondary to disease control. Persistent defects may impair nutrition, speech, swallowing and social function. Early low-risk measures, followed by reconstruction after stable remission, provide a safer balance. Multidisciplinary long-term care has also been emphasized in published GPA experience [9].

The main limitation is the absence of verified longitudinal outcomes and functional scores. Therefore, the results describe cohort structure and an evidence-based pathway rather than treatment-effect percentages.

Conclusion. In 104 patients with systemic vasculitis, GPA accounted for 46 cases (44.2%), MPA for 32 (30.8%) and EGPA for 26 (25.0%). Safe management requires emergency assessment, etiological verification, tissue-preserving source control, coordinated systemic therapy and rehabilitation. Delayed drainage of dangerous infection and unjustified radical surgery during active vasculitis should both be avoided; definitive reconstruction is indicated after infection control and stable remission.

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