ISTORIOGRAFSKI RAD
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DA LI ZNAMO KAKO SE RAZVIJALA HIRURGIJA MAKSILARNOG SINUZITISA KROZ VEKOVE?

DO WE KNOW HOW MAXILLARY SINUS SURGERY HAVE DEVELOPED THROUGH AGES?

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Kratak sadržaj

U radu je dat kratak istoriografski prikaz razvoja hirurgije inficiranog maksilarnog sinusa. U preantibiotskoj eri, jedini način da se olakšaju bolovi i spreče ozbiljnije komplikacije bila je hirurška drenaža maksilarnog sinusa. Iako svoje poreklo ima još u starom Egiptu, hirurgija maksilarnog sinusa počinje da se razvija u XVII veku. Od tada su opisane različite hirurške tehnike, ali se uz određene modifikacije operacija po Caldwell-Lucu i danas često koristi. Sedamdesetih godina prošlog veka u hiruršku praksu uvedena je tzv. funkcionalna endoskopska hirurgija, i danas u razvijenom svetu predstavlja najznačajniju hiruršku tehniku za tretman inficiranog maksilarnog sinusa.

***Ključne reči**: maksilarni sinus, hirurške tehnike*

Summary

The paper presents short historical development of the infected maxillary sinus surgery. In preantibiotic era, the only way to relieve pain and prevent serious complications was surgical drainage of the maxillary sinus. Although dating from ancient Egypt, the maxillary sinus surgery began to develop in XVIIth century. Since then, various surgical techniques have been described, and, with some modifications, the Caldwell-Luc's operation is still used today. The seventies of the previous century were marked by the introduction of so-called functional endoscopic surgery, and today, in the modern world, it represents the most important surgical technique of the infected maxillary sinus treatment.

***Key words**: maxillary sinus, surgical technique*

Uvod

Zbog svoje anatomske bliskosti sa zubima gornje vilice, maksilarni sinus i njegova patologija imaju poseban značaj u stomatološkoj i oralnohirurškoj praksi. Uprkos razvoju medikamenata, hirurški tretman hronično inflamiranog maksilarnog sinusa i danas predstavlja čest i uglavnom neizbežan terapijski postupak. Čovek je od davnina pokušavao da ublaži bolove koji su posledica infekcije maksilarnog sinusa. Smatra se da hirurgija maksilarnog sinusa najverovatnije potiče još iz vremena starog Egipta, kada je korišćena trepanaciona tehnika, ali je

Introduction

Due to its anatomic proximity to the upper jaw teeth, the maxillary sinus and its pathology have special importance in stomatological and oral surgery practice. Despite medicaments' development, surgical treatment of the cronically inflamed maxillary sinus represents frequent and usually inevitable therapeuthic procedure. Since old times, man has been trying to alleviate pain coming from the maxillary sinus infection. Maxillary sinus surgery is thought to begin at the time of ancient Egypt when trepanation technique was used, but, for ages, little interest

interesovanje za tretman inficiranog maksilarnog sinusa vekovima bilo vrlo malo. Kao najstariji pisani dokument u kome se opisuje maksilarni sinus, pominje se jedan Galenov (130–201 godine) spis.[1] Anatomija maksilarnog sinusa pominje se i u delu Leonarda da Vinčija, ali je opis kratak i nekompletan.[2] Prve jasne naznake o postojanju paranazalnih sinusa, dao je anatom i hirurg iz Bolonje del Carpi početkom XVI veka.[3] Nešto preciznije o maksilarnom sinusu pisali su Fallopius, Ingrassius i Julius Casserius iz Padove, po kome je maksilarni sinus u početku nazivan antrum Casserii.[3] Fallopius je smatrao da se sinusi razvijaju tek u odraslom dobu, dok su kod dece odsutni. Dugo se verovalo da sinusi sadrže samo tečnost i mukus koji su produkt mozga i pituitarne žlezde i koji se skupljaju u sinusima, i povremeno izbacuju preko nosa. Da su sinusi ispunjeni vazduhom, prvi je tvrdio Andreas Vesalius[4] (1514––1564) predavač anatomije u Padovi, u svom delu "De Humani Corporis Fabrica" (1543) u kome je opisao maksilarni, frontalni i sfenoidalni sinus. Vekovima je tretman inficiranog maksilarnog sinusa podrazumevao ekstrakciju prvog ili drugog gornjeg molara u cilju stvaranja oro-antralne fistule. Hirurška drenaža je bila jedino sredstvo u preantibiotskoj eri, koje je moglo da olakša bolove i spreči ozbiljnije komplikacije.

U anatomiji i tretmanu inficiranog maksilarnog sinusa, značajan pomak predstavlja delo Nathaniela Highmorea[5] (1613–1685) "Corporis Humani Disquisitio Anatomica" objavljeno 1651. godine, u kome je opširno opisao "antrum genae" i bliskost zuba. Od tada je maksilarni sinus često bio nazivan Highmori-eva šupljina. Povezanost infekcije poreklom od zuba i maksilarnog sinusa uočena je u XVII veku. Danas se smatra da je između 10–40% maksilarnih sinuzita dentogenog porekla.[6] Prvi put je metod otvaranja maksilarnog sinusa kroz alveolu prethodno uklonjenog zuba opisao William Cowper[7] (1666–1709) u knjizi Jamesa Drakea "Antropologia Nova" iz 1707. godine, pa se ovaj tip operacije od tada naziva po njemu. Louis Lamorier[8] (1696–1777) prezentovao je 1743. godine rad na Kraljevskoj akademiji za hirurgiju u Parizu, u kome je izumeo spoljašnji pristup maksilarnom sinusu. Maksilarni sinus je otvaran u predelu molara. Ovaj metod je ostao neprimećen bar dve decenije po njegovom

was shown in the treatment of the infected maxillary sinus. The oldest document describing maxillary sinus was Galen's (130–201 A.D.).[1] The anatomy of maxillary sinus was also mentioned in Leonardo da Vinci's work, but this description was short and incomplete.[2] The first clear ideas about paranasal sinus were given by the anatomist and surgeon from Bologna del Carpi at the beginning of XVIth century.[3] More precise writing about maxillary sinus was done by Fallopius, Ingrassius and Julius Cesserius from Padova after whom the maxillary sinus was first called antrum Cessereii.[3] Fallopius thought that sinuses developed in the adulthood, with being absent in the childhood. For a long time it was believed that sinuses contained only fluid and mucus as products of brain and pituitary gland, which gathered in sinuses and occasionaly were discharged through the nose. That sinuses were filled with air was first claimed by Andreas Vesalius[4] (1514–1564), the anatomy lecturer from Padova. In his work "De Humani Corporis Fabrica" (1543) he described the maxillary, frontal and sphenoidal sinus. For centuries, the treatment of the infected maxillary sinus meant extraction of first and second upper molars aiming at making oro-antral fistula.The surgical drainage was the only procedure in preantibiotic era that could relieve pains and prevent serious complications.

In anatomy and treatment of the infected maxillary sinus, the considerable progress was made by Nathaniel Highmore[5] and his work "Corporis Humani Disquisitio Anatomica", published in 1651. where he broadly described "antrum genes" and teeth proximity. Since then, the maxillary sinus has been often called Highmore's cavity. The assocciation between infection caused by teeth and maxillary sinus was noted in XVIIth century. It is thought today that 10–40% of maxillary sinusitises is of dentogenic origin.[6] For the first time the method of opening maxillary sinus through alveola, preceded by tooth extraction, was described by William Cowper[7] (1666–1709) in the book of James Drake "Antropologia Nova" (1707). Since then, this type of operation have been called after him. In 1743, Louis Lamorier[8] (1696–1777) presented his work at The Royal Academy for Surgery in Paris, showing his invention – the external approach to the maxillary sinus.The maxillary sinus was opened in the molar re-

objavljivanju. Jourdain 1765. god. a kasnije i Bordenave 1768. god. su populisali Lamorierovu tehniku.

John Hunter[9] (1728–1793) je objavio 1771. godine u njegovom delu "Treatise on the Natural History of Human Teeth" metodu perforacije antruma sa nazalne strane. Ova procedura punktiranja antruma kroz srednji meatus je bila skoro identična metodi preporučenoj 1760. godine od strane zubara iz Bordoa Jourdaina (1734–1816), koji je svoju tehniku usavršio na kadaverima.[3] Ove tehnike lavaže maksilarnog sinusa bile su zaboravljene na početku devetnaestog veka. Tako je Jaques Louis Deschamps[10] (1740–1824) preporučio u svom delu iz 1804. godine, drenažu maksilarnog sinusa uklanjanjem bolnog zuba, uz proširenje otvora do te veličine da se mogao uvesti prst. Naravno, kasnije je bilo problema sa zatvaranjem fistule, za šta je korišćen vosak, zlatna pločica ili obturator od tvrde gume.[3] U prvoj polovini devetnaestog veka nije bilo daljeg napretka u hirurškom tretmanu inficiranog maksilarnog sinusa.

Interesovanje za bolesti maksilarnog sinusa ponovo je zaživelo u poslednjim decenijama devetnaestog veka. Period ranih 1880-ih takođe se smatra početkom razvoja moderne rinologije. Interesujući se za tretman inficiranog maksilarnog sinusa, Johan von Mikulicz-Radecki[11] (1850–1905), a kasnije i Herman Krause (1848–1921) razvili su 1886. odnosno 1887. godine, prilično debeo trokar za punktiranje antruma kroz donji meatus. Leopold Lichtwitz (?–1909), francuski laringolog modifikovao je trokar u dugu finu jaku kanilu.[2]

Američki laringolog Howard Lothrop[12] (1864–1928) objavio je 1897. godine rad koji je ostao nezapažen, o svojoj metodi koja je podrazumevala veliki otvor u donjem meatusu. Nekoliko godina kasnije sličan hirurški metod objavio je Raymond-Charles Claoué[13] (1864–?). Sve ove konzervativne metode potpuno su potisnute kada je uvedena "nova" radikalna operacija maksilarnog sinusa.

Nezavisno jedan od drugog ovu operaciju su opisala tri autora: George Walter Caldwell[14] (1866–1918) iz Nju Jorka objavio je ovaj metod 1893. godine, Robert Henry Scanes Spicer[15] (1857–1926) iz Londona–1894. godine, dok je Henry Paul Luc[16] (1855–?) iz Pariza, neznajući za rad prethodna dva autora, publikovao svoj rad 1897. godine. Tehnika se sastoji od otvagion.This method remained unnoticed for at least two decades on its publication. Jourdain in 1765. and Bordenave in 1768. promoted Lamorier's technique respectively.

In 1771, in his work "Treatise on the Natural History of Human Teeth" John Hunter[9] published the method of antrum penetration from the nasal site.This procedure of antrum puncture through the middle meatus was almost identical to the method suggested in 1760. by dentist Jourdain (1734–1816) from Bordo, who specialized this techniques on cadavers.[3] These techniques of maxillary sinus lavages were forgotten at the beginning of XIXth century. Thus, Jaques Lois Deschamps[10] (1740–1824) suggested in his work (published in 1804) the maxillary sinus drainage by extraction of a painful tooth, with extension of the opening to the extent of a finger size. Of course, there were problems later with fistula closing, for which wax was used, gold plate or obturator made of solid gum.[3] In the first half of XIXth century there was no further progress in the surgical treatment of the infected maxillary sinus.

The interest in the maxillary sinus disease arose again in the last decades of XXth century. The early 1880-ies are also considered as a beggining of the modern rhinology development. Working on the infected maxillary sinus, Johan von Mikulicz-Radecki[11] (1850–1905) and Herman Krause (1848–1921) invented in 1886, and 1887. a fairly thick trocar for antrum puncture through the middle meatus. Leopold Lichtwitz (? – 1909), the French laringologist, modified trocar into a long fine cannula.[2]

American laringologist Howard Lothrop[12] (1864–1928) published in 1897. a work about his method which included a big opening in the lower meatus. The work remained unnoticed. Few years later, a similar surgical method was published by Raymond-Charles Claoue[13] (1864–?). All these conservative methods were complitely pushed aside when "new" radical operation of the maxillary sinus was introduced.

Quite independently, this operation was described by three authors: George Walter Caldwell[14] (1866–1918) from New York published this method in 1893, Robert Henry Scanes Spicer[15] (1857–1926) from London published it in 1894, while Henry Paul Luc[16] (1855–?) from Paris, not knowing for two previous authors, published his work in 1897. The technique was

ranja maksilarnog sinusa kroz fosu kaninu, radi revizije i uklanjanja sluznice kompletnog sinusa i pravljenja intranazalne antrostome u donjem ili srednjem meatusu. Danas se ova procedura često naziva Caldwell-Lucova operacija. Na početku dvadesetog veka ova operacija je bila skoro jedini način za tretman hroničnog sinuzita. Dvadesetih godina prošlog veka stav prema Caldwell-Lucovoj operaciji promenjen je ka konzervativnijem tretmanu, uočavanjem da veliki procenat pacijenata podvrgnutih ovoj proceduri ima izražene postoperativne tegobe (anestezija/parestezija, bolovi u vidu neuralgija, stvaranje ožiljnog tkiva u predelu antrostome i dr.), ponekad čak i izraženije u odnosu na tegobe pre intervencije.[17] Obwegeser i Tschamer[18] (1957) su na osnovu svojih ispitivanja dali preporuku da radikalno uklanjanje sluznice sinusa treba ograničiti, kao i Reed[19] (1962), koji smatra da treba ukloniti jedino polipozno i inflamirano tkivo. Haanaes[20] (1975) je predložio pravljenje oralne antrostome i izvođenje štrajfne u vestibulumu gornje vilice sa operisane strane. Gazu je moguće izvesti i u vestibulumu sa suprotne strane od operisane, čime se izbegava eventualno stvaranje oroantralnih fistula u vestibulumu.

Iako su mnogi autori zagovarali radikalnu operaciju maksilarnog sinusa u slučaju postojanja oroantralne fistule, sumnjajući u regenerativnu sposobnost mukoze sinusa, Obwegeser i Tschamer[18] (1957) su na osnovu svog istraživanja zaključili da radikalna operacija sinusa može biti izbegnuta u najvećem broju slučajeva, ukoliko se u toku više dana preoperativno vrši irigacija maksilarnog sinusa antibioticima.

Post-operativni bol, uvođenje antibiotika kao i iskustvo da najveći broj hroničnih supuracija iz maksilarnog sinusa biva izlečen punktiranjem i ispiranjem, ograničili su primenu Caldwell-Lucove operacije na slučajeve kod kojih je prethodni tretman bio neuspešan. Osamdesetih godina prošlog veka (Christensen, Gilhus-Moe, 1979)[21] uvedena je nova operativna tehnika za zatvaranje oroantralne fistule, koja podrazumeva upotrebu balon katetera umesto trake gaze. Ova tehnika omogućava u slučaju potrebe irigaciju ili evakuaciju sinusa u neposrednom postoperativnom periodu, dok je prisutan kateter.[17] Ovakav elastičan pristup sastoji se u restituciji fiziološke drenaže preko ostiuma sinusa uz pomoć lokalne terapije sinusa

composed of opening maxillary sinus through fossa canina because of revision and removal of complete sinus mucosis and making of intranasal antrostoma in the lower and middle meatus. Today, this procedure is often called Caldwell-Luc's operation. At the beginning of XXth century, this operation was almost the only treatment of the chronic sinusitis. In the twenties of the previous century, the attitude toward Caldwell-Luc's operation was shifted towards more conservative treatment. They noticed that great percentage of patients after this procedure had marked post-operative complaints (anesthesia, parasthesia, pains in form of neuralgias, appearance of scar tissue in area of antrostoma etc.), sometimes even more serious than before the intervention.[17] On the basis of their researches, Obwegezer and Tschamer[18] (1957) recommended that radical mucosis removal should be limited. Reed[19] who also assumes this attitude thinks that one polipoid and one inflamatory tissue should be removed. Haanaes[20] (1957) suggested making of oral antrostoma and introducing of gauze strip into the upper jaw vestibule from the operated side. Gauze is possible to be introduced into the vestibule from the side opposite to the operated one, by which the possible apperance of oro-antral fistulas in the vestibule was avoided.

Although many authors supported the radical operation of maxillary sinus in case of oro-antral fistula existance, doubting sinus mucosis regenerative ability, Obwegeser and Tschamer[18] (1957) concluded on the basis of their researches that radical sinus operation could be avoided in the majority of cases, if in the course of the following post-operative days the maxillary sinus antibiotic irigation was done.

The post-operative pain, introduction of antibiotics, as well as an experience that majority of chronic maxillary sinus suppurations can be cured by puncturing and rinsing, limited the use of Caldwell-Luc's operations to the cases in which the previous treatment was unsuccessful.

In the eighties of the previous century (Christensen, Gilhus-Moe, 1979)[21] a new operative technique for closing of oro-antral fistula was introduced, and it used balloon catheter instead of gauze stripes. If necessary, this techique provides irrigation and sinus evacuation in immediate post-operative period, while catheter[17] is present. Such elastic approach consists of physi-

i obnavljanja obolele sluznice maksilarnog sinusa. Na Odeljenju oralne hirurgije Klinike za stomatologiju u Nišu, operativna tehnika uz upotrebu balon katetera koristi se od 1990. godine, i do danas je na ovaj način urađeno preko 200 slučajeva operativnog zbrinjavanja oroantralne fistule, uz vrlo afirmativne postoperativne rezultate u odnosu na tehniku sa primenom jodoform štrajfne. Ova tehnika se takođe može uspešno kombinovati sa primenom glas-jonomer mikro implantata za zatvaranje oro-antralne fistule.[22]

Najčešće korišćen terapijski pristup u tretmanu inficiranog maksilarnog sinusa dentogenog porekla, danas je ispiranje sinusa kroz stvorenu oro-antralnu fistulu i oro-antralnu komunikaciju, ili kroz intranazalnu antrostomu u donjem meatusu, uz istovremenu primenu efedrinskih kapi za nos, antibiotika i kortikosteroida. Sedamdesetih godina prošlog veka, tehnika nazalne endoskopije postala je opšte prihvaćena i uvedena kao dijagnostička metoda, a kasnije razvijena i kao hirurška tehnika od značaja za tretman inficiranog maksilarnog sinusa. Ova takozvana funkcionalna endoskopska hirurgija, u najvećem broju slučajeva, koncentriše hirušku aktivnost u srednjem meatusu. Posle više od sto godina od uvođenja Caldwell-Lucove operacije, funkcionalna endoskopska hirurgija postala je najznačajnija hirurška procedura za tretman inficiranog maksilarnog sinusa. Na Klinici za stomatologiju u Nišu, sa upotrebom endoskopa u hirurgiji maksilarnog sinusa počelo se u zadnjoj deceniji prošlog veka.[17] Ova tehnika danas se koristi i pri uklanjanju stranog tela iz sinusa, endoskopski kontrolisane resekcije apeksa korenova, podizanju poda sinusa i postavljanju implantata.[5]

ological drainage restitution via sinus ostium with the help of the local sinus therapy and regeneration of the maxillary sinus mucosis. At Department of oral surgery, Clinic of Stomatology in Niš, the operative technique with the use of balloon catheter has been used since 1990, and up to now more than 200 operations of oro-antral fistula have been done followed by highly positive results in comparison to the use of gauze strip. This operative technique can be successfuly combined with the use of glass – ionomer micro implant for closing of oro-antral fistula.[22]

The most common therapeutic approach in the treatment of the infected maxillary sinus of dentogenic origin is today the sinus rinsing through the made oro-antral fistula and oro-antral communication, or through the intranasal antrostoma in the lower meatus, with the simultaneous use of efedrin nose drops, antibiotics and corticosteroids. In the seventies of the previous century the technique of nasal endoscopy became generally accepted and introduced as a diagnostic method, and later on it was developed as a surgical technique important for the treatment of the infected maxillary sinus. This so-called functional endoscopic surgery, in the majority of cases, focuses on surgical activity in the middle meatus. After more than 100 years from the introduction of Caldwell-Luc's operation, the functional endoscopic surgery became the most important surgical procedure for the treatment of the infected maxillary sinus. At the Clinic of Stomatology in Niš, the use of endoscope in the maxillary sinus surgery started in the last decade of the previos century.[17] This technique is used today in thes removal of a foreign body from the sinus, endoscopically controlled apex roots' resection, sinus floor lifting and insertion of implants.[5]

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