Historical article

Acta Medica Academica 2018;47(1):139-143
DOI: 10.5644/ama2006-124.224

The Hippocratic Method for the Reduction of the Mandibular Dislocation, an Ancient Greek Procedure Still in Use in Maxillofacial Surgery

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Received: 2 February 2018
Accepted: 13 April 2018

Key words: Mandibular dislocation • Temporomandibular joint dislocation • Reduction • Maxillofacial surgery • Hippocrates.

Introduction

Although opinions concerning knowledge of anatomy in the Hippocratic era are controversial, Hippocrates and his followers were the first to introduce clinical anatomy. Even though post mortem examination was strictly prohibited, both by law and religious ethics, the Hippocratic school of medico-philosophers acquired sufficient experience to understand the human body's skeletal system, and described a series of bone fractures and dislocations. Apart from simply noting bone and joint disfigurations, they proposed treatment and palliation methods. Their anatomic knowledge is revealed in "Corpus Hippocraticum" and especially in the treatises "Μοχλικός" (On the Instruments of Reduction, or Mochlicon), "Περί Ἀρθρών" (On Articulations), "Περί Ἀγμῶν" (On Fractures), "Περί τῶν ἐν Κεφαλήν Τρωμάτων" (On Injuries of the Head), and "Περί Οστέων φύσιος" (On the Nature of the Bones) (Figure 1) (1). Among the plethora of orthopaedic interventional treatment procedures introduced by the Hippocratic School, stands the method for reduction of mandibular dislocation (MD) (2).

MD is nowadays an uncommon pathology, constituting a pathophysiologic joint condition presenting oral and maxillofacial surgeons with a challenge in its management (3). The condyle of the mandible articulates bilaterally in a concavity, known as the glenoid fossa, or simply the mandibular fossa. Its dislocation, when the condylar process...
is displaced out of the glenoid fossa, is due
to either imbalance in the neuromuscular
function, or structural deficit. Conservative
interventional methods in its management
include symptomatic pain relief with analge-
sics, and manual reduction (4). This simple
approach was in fact introduced about 2500
years ago by Hippocrates and his pupils (2).

We report, as an example, an 80 year old
female patient with a missed case of bilat-
eral MD, treated conservatively with the use
of the Hippocratic method. Our case may
present nothing new, but it links some mis-
derstood facts and contributors with the
truth of the ancient Greek Corpus Hippo-
craticum. We furthermore propose the term
“mandibular dislocation” for such a condi-
tion, as a more accurate medical definition
in term of clinical anatomy.

A modern case report

The patient was admitted to our private de-
partment presenting with an open bite, an
anxious face and mild drooling of saliva.
Physical examination, after palpation of the
preauricular region, revealed emptiness in
the joint space. The patient remembered a
“strange feeling of movement in her man-
dible after yawning” 6 months prior to her
visit. Her scoring with the validation scale
tool “Greek Brief Pain Inventory” (GBPI)
was 3 (0=no pain, 10=severe pain, plus op-
tical scale), reporting almost no pain at all.
Her nutrition included mostly ground food
and soups because her oral cavity presented
an almost complete absence of teeth. Fur-
thermore, she had refused to use dentures.
Supplementary pathology included osteo-
porosis, diffused athropathia, mild anaemia,
and vascular dementia (MMSE=17). X-ray
revealed a bilateral MD of Type III by Akin-
bami's classification (the head of the condyle
is high-up in front of the base of the emi-
nence) (Figure 2) (4-5). Manual reduction
of the MD under general anaesthesia and
muscular relaxants was selected to avoid a
possibly severe and painful incident. There
were no immediate complications and the
patient was discharged with the suggestion
of follow-up by a maxillofacial surgeon.

Discussion

In Corpus Hippocraticum (cca 5th-4th cen-
tury BC), in the treatise “Mochlicon” there is
a very accurate description of MD, attribut-
ed to tendon relaxation and muscle atrophy,
classified as unilateral and bilateral, mainly caused by yawning. It was described as a rare condition, which needed to be quickly addressed, while the bilateral form was noted as more harmful. The treatment was also thoroughly described: “The patient is put in a lying or sitting position, while an assistant must hold the head tightly in a steady position. The physician grabs the mandible with his two arms from inside and outside the oral cavity (today: the external oblique line and the area under the mandible), from both sides, left and right, performing 3 manipulations simultaneously. He lifts up the mandible, pushes it backwards while closing the oral cavity, all at once. Painkillers should be given (today opioids). The mandible should be fixed in its normal position with the aid of bandages (today: Barton bandage)” (2).

This method is still in use. Although Hippocrates was the one who introduced the practice of bandages for the mandible to be fixed, the international nomenclature attributed it to naval surgeon, William Paul Crillon Barton (1786-1856) (Figure 3).

Furthermore, researchers believe that Lewis modified the procedure in 1981 by proposing the sitting position (4-6), while this had already been suggested in the Hippocratic era (Greek fragment: καθημένου του ανθρώπου) (2). The inveteracy of this method may be further certified by both the reference and the illustration in the manual of Appolonius of Citium in Cyprus (c. 1st century BC) (Figure 4) (7).

Apart from the Hippocratic understanding of the role of the weakening of the local musculature, the “open lock sign” was also known (Greek fragment: προέχει η κάτω γνάθος ... ξυμβάλλειν ου δύναται). The original ancient text describes what surgeons nowadays express as “the mandible

Figure 3. Gorley CE. The Barton Bandage, Centre for the History of Medicine: https://collections.countway.harvard.edu/onview/items/show/17962.
is postured forwards...an open bite". Furthermore, medico-philosophers of the Hippocratic era, faithful to the ancient Greek tradition of accurate anatomic orientation, described exactly the MD as “the mandible leaving its place”. Thus, a bone is moved from its normal articular position, not the joint itself (2). Having in mind that a joint cannot be moved, we may note that the expression used by a plethora of modern researchers “temporomandibular joint dislocation” (3-5, 8) is in fact an incorrect anatomic term which should be abandoned.

Our patient reported no pain, while an acute dislocation is usually a very painful clinical entity (4). Her age and nutrition (muscular atrophy), combined with vascular dementia may explain her condition. Furthermore, her low cognitive reserve, her rural residency, the complete absence of teeth and dementia all contributed to a neglected and/or non-perceptible incidence. In the end, she was treated with a method dating back to Greek antiquity, which is about 2500 years old. The bilateral MD dislocation was easily reduced using the Hippocratic bi-manual intraoral technique under sedation, with two medical personnel present (2, 9). Pain, during and after the procedure, in our case was dealt with the administration of opioids (codeine and tramadol). In the Hippocratic era, herbal drugs based on meconium (Greek: μηκώνιον), most probably the Papaver Somniferum plant, were considered as narcotics and painkillers (10). Moreover, Thessaly’s endemic plant, mandrake (known also as mandragoras, Greek: μανδραγόρας) was also widely administered as a sedative and narcotic drug during surgical procedures (11). Personalized confrontation of the pain with opioids, represents one more similarity to be added to the apposition of ancient Greek and modern maxillofacial surgery.

Although various interventional Hippocratic techniques remain timeless, the management of facial trauma in the Hippocratic era is underestimated and usually neglected when historians trace the origin of modern methodology. Techniques from the past were named after modern physicians who were considered to be the innovators, whilst the true pioneers remain unappreciated. The advancement of medicine has only further established the Hippocratic dogma for the reduction of MD (12).

Epilogue

The Hippocratic School of Medicine, through thorough observation and extended acquired experience, succeeded in establishing surgical techniques which have endured time. The Hippocratic intervention
for reduction of a MD is a simple non-surgical procedure still used by modern maxillo-facial surgeons. Due to its global acceptance, one may even say that it is a medical dogma, a timeless manoeuvre which, in most situations, is the right conventional intervention to be used in MD.

Authors’ contributions: Conception and design: VT and GT; Acquisition, analysis and interpretation of data: VT; Drafting the article: GT; Revising it critically for important intellectual content: VT and AF; Approved final version of the manuscript: AF.

Conflict of interest: The author declares that he has no conflict of interest.

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