Care of The Singing Voice

Essay submitted for the Partial Fulfillment
of
Master Degree in Phoniatrics

By

Ahmed Salem
M.B.,B.Ch.
Faculty of Medicine –Cairo University

Supervised by

Prof. Dr. Mohamed Mostafa Mohamed

Head of Phoniatric Unit

Professor of Phoniatrics

Faculty of Medicine –Cairo University

Dr. Hassan Mohamed

Assistant Professor of Phonatrics

Faculty of Medicine –Cairo University

Faculty of Medicine

Cairo University

2010

يعرف الصوت على انه عنصر الكلام الذى يمد المتكلم بالأشارة السمعية التى ينقل من خلالها رسالته الى المستمع. هذا التعريف يوضح اهمية الصوت بالنسبة للمغنيين لأجل تحقيق أهدافهم الوظيفية.

الصوت هو عملية معقدة, تضمن اهتزاز الثنايا الصوتية لاصدار الصوت و الكلام, و التحكم فى الصوت عملية ضرورية فى حياة الفرد و فى قدرته على التحكم فى الظروف المحيطة و الحفاظ على الاتزان فى العلاقة مع المستمع.

تتعرض بعض المهن لظروف تؤدى الى نسبة اعلى للاضرار بالصوت اكثر من غيرها . وأفادت العديد من الدراسات أن مشاكل الصوت شائعة بين محترفى استخدام الصوت ، ويعتبر من بين هؤلاء المطربين .

يعتبر المغنون الاكثر عرضة للاصابة باضطراب الصوت, ولقد اوضحت بعض الدراسات الخاصة بنسب انتشار اضطرابات الصوت ان حوالى نصف المغنيين يعانون مثل هذة الاضطرابات.

التصويت هو عنصر هام فى عملية الكلام, اثناء اصدار الصوت تعمل الثنايا الصوتية كمحول لحركة الهواء الى طاقة سمعية تنقل الى الشفاة و هذه هى كيفية اصدار الصوت.هذا التحويل للطاقة يتم على مستوى المزمار(المسافة بين الاحبال الصوتية), ولكن هذه الطاقة تتأثر بالمتغيرات اسفل و اعلى المزمار.

تم وضع العديد من النظريات لتفسير عملية التصويت,و من اهم هذه النظريات, نظرية المرونة العضلية حركة الهواء بمكوناتها الاثنين.

فاند برج (١٩٥٨) اقترح ان مرونة الانسجة هى السبب فى عودة الثنايا الصوتية الى اماكنها بعد تمددها, ونظرية برنوى فى تفسير هذه العودة عن طريق انخفاض الضغط على مستوى التضييق هو السبب فى استمرار عملية التصويت.

تيتزا (١٩٨٦) اقترح ان الضغط داخل المزمارعنصر هام فى اهتزاز الثنايا الصوتية بجانب نظرية برنوى و قد اثبت تيتزا ان الضغط داخل المزمارهو المحرك الاساسى فى اهتزاز الثنايا الصوتية.

هناك العديد من اصوات الغناء, اصوات النساء تنقسم الى : سوبرانو, ميزو سوبرانو وكونترالتو , اما اصوات الرجال فتنقسم الى: كونترتينور, تينور, باريتون و باس.

السوبرانو: اعلى صوت نسائى فى الحدة.

الميزو سوبرانو: صوت نسائى متوسط فى الحدة و هو الصوت النسائى الاكثر انتشارا.

الكونترالتو: هو اقل صوت نسائى فى الحدة وهو صوت اوبرالى نادر.

الكونتر تينور: اعلى صوت رجالى فى الحدة.

التينور: صوت رجالى متوسط فى الحدة بين الكونتر تينور و الباريتون.

الباريتون: صوت رجالى متوسط فى الحدة و هو الصوت الرجالى الاكثر انتشارا.

الباس: هو اقل صوت رجالى فى الحدة.

ان ميكانيكية امراض الصوت لدى محترفى استخدامه متعددة الاسباب, فالعديد من عوامل الخطورة تشارك فى تطور هذه الامراض, كما يمكن للعديد من امراض الصوت ان تصيب المغنيين بالتالى.

يعد تحميل الصوت هو الأكثر خطورة بين هذه العوامل,وهو يتضمن كثرة استخدام الصوت, الاستخدام السيء للصوت, التدخين, الظروف البيئية غير الملائمة و العوامل النفسية. فى النهاية يؤدى زيادة تحميل الصوت الى الوهن الصوتى.

يمكن لعوامل اخرى مثل السن, النوع, الثبات الصوتى, المهارة الصوتية, الظروف الصحية, العادات الحياتية و سمات الشخصية, أن تعتبر عوامل مساعدة فى نشوء امراض الصوت.

ولأن مثل هذه الاضطرابات الصوتية تصيب الكثير من محترقى الغناء, فإن الوقاية منها ضرورية للغاية, و يعد المستوى الأول للوقاية هو الأمثل ضمن مستويات الوقاية الثلاثة, و يشمل الممارسات الصحية لأستخدام الصوت و التدخل فى عوامل الخطورة الممكنة.

بناء على ذلك يمكن تقسيم طرق الوقاية التى تهدف الى تقليل العوامل المسببة لاضطرابات صوت الغناء

مستوى الوقاية الأول:

العناية الشخصية بالصوت وتشمل:

أ الارشادات فيما يتعلق بالوسائل الصحية لأستخدام الصوت.

ب تدريبات تعديل السلوك الصوتى.

ت الحفاظ على وضعية صحيحة اثناء الغناء

ث مراعاة احماء الصوت قبل الغناء

مستوى الوقاية الثانى:

وذلك يتم عن طريق الاكتشاف المبكر لاضطرابات الصوت و هذا يتم عن طريق:

١ - إجراءات التشخيص الابتدائي:

أ طريق المقابلة الشخصية للمريض وتتضمن البيانات الشخصية و تحليل الشكوى و السؤال عن اعراض الوهن الصوتى

ب التقييم السمعى للمريض بعد الانصات الجيد للصوت.

٢ التشخيس الاكلينيكى:

أ – التصوير و التوثيق الحنجرى عن طريق منظار حنجرى بلعومى حنجرى صلب او الفى بلعومى حنجرى مرن.

ب – التسجيل الصوتى.

٣ طرق تشخيص اضافية:

أ – قياس اقصى وقت للتصويت

ب – قياس معدل تدفق الهواء

ج – قياس المقاومة فى المزمار

د قياس حدة الصوت

مستوى الوقاية الثالث:

معالجة الاضطرابات المختلفة للمغنيين التى قد تسهم فى امراض الصوت لديهم عن طريق استخدام طريقة (العلاج الصوتى)

هناك العديد من التقنيات من العلاج الطوقى التي تساعد في تصحيح طرق التصويت السيئة او الغير ملائمة, مع العناية بوضعية الجسم و التنفس و تحرير التوتر من الثنايا الصوتية, صدى الصوت من أجل تعزيز كفاءة انتاج الصوت. يجب أن تعلم هذه الطريقة لجميع محترفى استخدام الصوت و خصوصا المغنيين.

واحدة من طرق العلاج الصوتى الأكثر استخداما هي طريقة اللكنة سميث , الدورالرئيسي من هذه الطريقة هو تحقيق سيطرة أفضل على صوت وإنتاج الكلام. و تهدف الطريقة على نحو شامل الى تحقيق توازن أفضل بين تدفق هواء الزفير (معدل والقوة والسرعة) و القوة العضلية للثنايا الصوتية.

ويرد هذا الأسلوب عادة فى ٢٠ ٢٥ جلسة ، الجلسة ٢٠ دقيقة ، مرتين في الأسبوع.

أسس طريقة اللكنة هي:

أ التنفس البطنى حجابى.

ب اللعب الايقاعى بحروف العلة ثم بالنطق بعد ذلك.

ت حركة الجسم و الذراع.

Introduction

Vocal sound is one of the defining features of humanity. Its commonality, pluraity and development distinguish the species. Within the wide range of sounds that humans make with their voices, there are two constellations that commonly have the greatest socio-cultural significance.

These are categorized as speech and singing, but there is a potential (and actual) significant overlap between the two, as both sets of behaviours are generated from the same anatomical and physiological structures and intiated/interpreted by dedicated neuropsychobiological networks whose development and function are shaped by cultural experience (Coltherat, 2003).

Our prediposition to perceive particular vocal sounds as singing or speech is dependent on the dominant acoustic features. Perception begins when the sensory system is stimulated by acoustic information that is filtered according to principles of perceptual organization which grouped the sounds together according to some key feauters, such as pitch range, temporal proximity, similarity of timbre and harmonic relationships.

The first few months of life, for example, are often characterized by vocal play (Papousek, H., 1996) in which the growing infant's vocalization could be interpreted as singing as well as speech-like.

Cross(2001) argues that the essence of music may be found in its grounping in social interaction and personal significance, as well as being rooted in sound, movement and hetergeneity of meaning

In singing , ***Cross (2001)*** goes further by suggesting that the communication of emotion is at the heart of sung performance through the combined use of acoustical (vocal) cues.

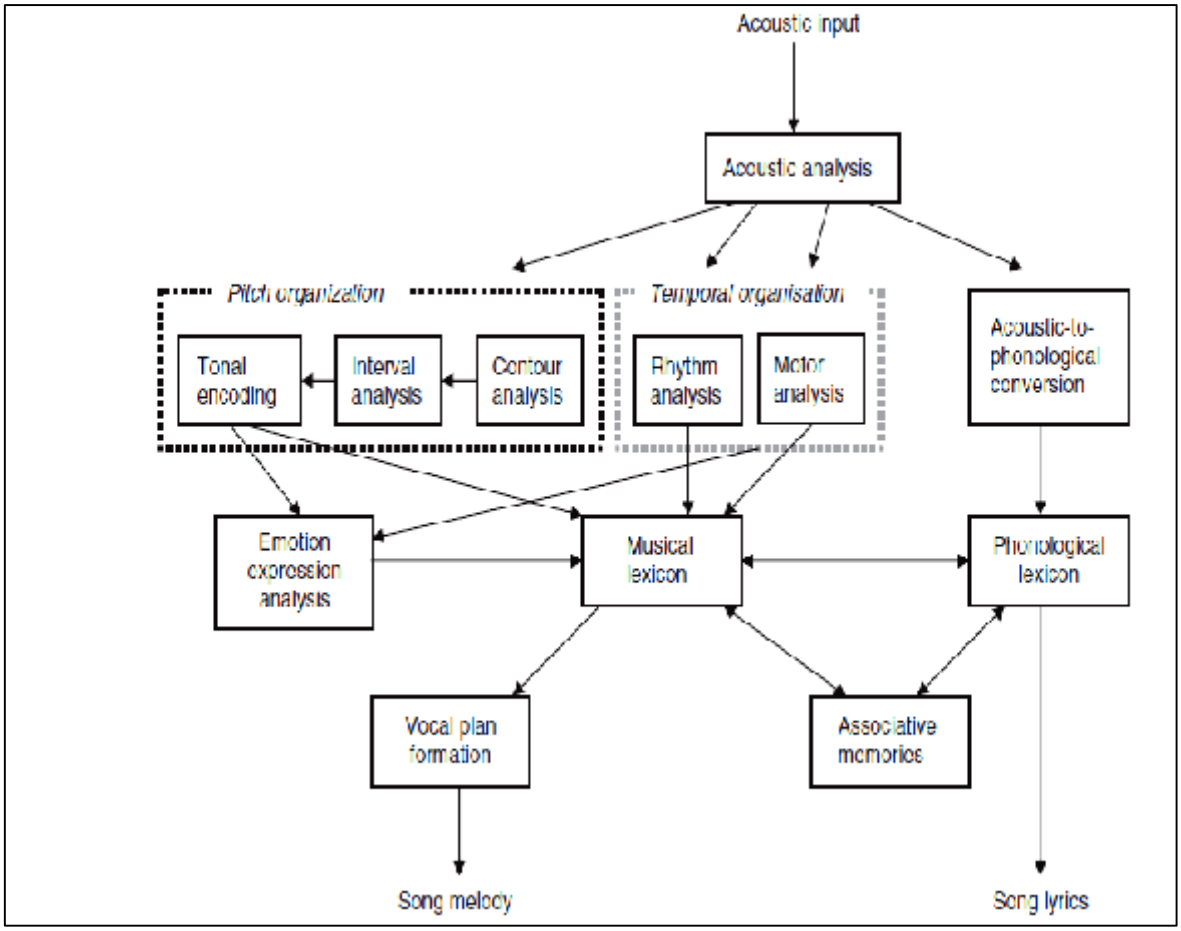

Figure (1) : Model of music processing in singing ***(Coltherat, 2003)***

As singing and singers evolve they will not be able to ignore the importance and impact of current and future knowledge of Eastern and Western philosophies, because it will enable performers to achieve a wholeness that contributes significantly to the tangible and intangible qualities of sound. How a person relates to him/herself and achieves wholeness is an important aspect of singing and there are a number of areas along these lines which merit study: physical factors at

macro and micro-levels, vibration, “quantum” factors, sound and healing and purity of emotions.

These factors are an important part of the vitality and “life energy’ of the singer and of the resulting power of the music presented. Healthy energy in the singer creates the same in the audience, whereas poor energy can leave the listener feeling down or drained for no apparent reason (Diamond, 1983).

Ideally, the listener will leave feeling energised and enhanced. In the past singers have tended to be more concerned with the voice rather than the actual effect it was having, the actual making of the tone and the science of it, getting involved emotionally without allowing the audience to feel for themselves, and generally missing out on true listening and awareness of self, audience and the atmosphere. When singers begin to incorporate a wider awareness of these things in a positive manner the sound of the future will come from the ‘spirit’ and the heart rather than an obsession with my voice and my tone.

The earlier work in the 80’s and 90’s around life energy by Diamond, in quantum healing by Chopra, in the Tao and physics by Capra, and so many others, has expanded into the fields of learning, teaching, healing, and self-development so fast, and with so many derivations and new investigations, that we are experiencing a whole new wave of information propelling us into the 21st Century. The field of singing and the voice must stay in touch and in tune with this because it will change singing and how we work with singers for years to come.

Capra (1990) and Greene (2003) in physics, Pert (1997) and Taylor (2008) in physiology, and Chopra (1989) and Hunt (1996) in energy and healing introduced the layperson to new and fascinating aspects of quantum physics,

physiology, and healing that describe smaller and smaller units of energy. These units permeate and pervade everything that exists to form the constitution of space itself. (The physicists refer to it as the fabric of the universe or matrix).

Therefore everything, including man, his thoughts, actions and movements, is part of the whole; every single thought and event affecting everything else. It is interesting to consider how this differs little from sound, which travels in invisible, but audible, waves filling space and furnishing energy to an arena or auditorium full of people. Performer and audience have an effect on each other. It is essential that singers and teachers now become aware of the need to learn about the affects of energy and how to use it wisely and responsibly in performance and teaching

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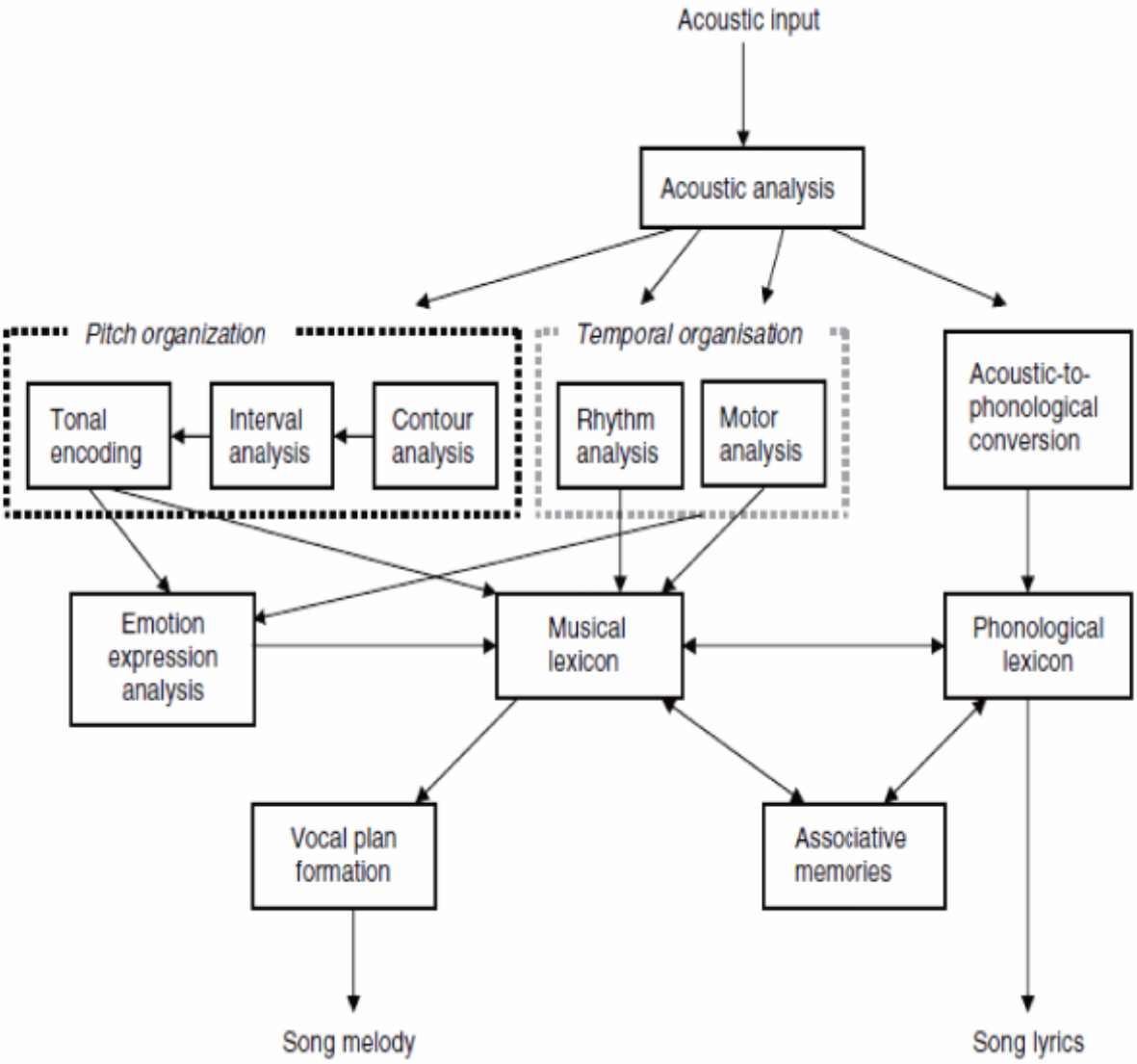

Figure (1) Model of music processing in singing (Coltherat, 2003)

Aim of The Work :

The aim of this work is to review the factors affecting singing voice and the various conditions that may lead to the development of such voice problems among singers, in order to determine the effective measures of caring of singing voice and prevent the negative impact on singer's carrier.

Chapter One: Phonatio

Phonation

Of all the animals capable of voicing recognisable noises and signals,only man is capable of articulation and communication in words. Too often this ability to vocalise is taken for granted and the vulnerability of the vocal mechanism is ignored until it is spoiled by misuse, they are subject to fatigue, disease and emotional factors.

Failure to realise this and take appropriate rest periods can lead to vocal abuse that may jeopardise a singer's career.

Because the vibratory mechanism includes muscles, it is important to warm up as athletes do before a practice or performance. Improper or insufficient vocal warm-up is a potent cause of vocal fatigue and inefficiency, so it was important to have a close look over the anatomy of this vibratory system.

The anatomy of the vibratory mechanism:

The larynx is a simple-looking structure, and this belies the subtlety and complexity of its function. It has a skeleton of cartilages with joints; its joints are held by ligaments and operated by small muscles (Figs 2and3). It is connected

above by a common air and food passage, and below communicates directly with the trachea (Zemlin WP, 1997).

Several sets of paired intrinsic muscles (those located within the structure of the larynx) govern the movements of the cartilages of the larynx. These are responsible for the production of sound. There are four kinds of movement of the vocal folds:

(1) Adduction of the vocal folds, as in singing and speaking(and also in initial stages of lifting and in swallowing)

(2) Abduction of the vocal folds for breathing (Fig2)

(3) Elongation of the vocal folds for changes in pitch and register.

(4) Shortening and thickening of the vocal folds such as that occurring in heavy registration, usually on low and medium pitches (Negus VE, 1962).

Two sets of muscles adduct the vocal folds: the lateral crico-arytenoids and the inter-arytenoids (Figs 2 and 3). When the lateral cricoarytenoids contracts the vocal folds and vocal processes of the arytenoids are approximated.

To complete the closure of the glottis, the contraction of the inter-arytenoid muscles bring the arytenoid cartilages together (Figs 2 and 3). When there is incomplete closure, a breathy sound is emitted. This can occur when the inter-arytenoids fail to contract leaving a chink between the arytenoids, thereby causing a breathy sound (Hirano M, et.al 1981).

Contraction of the crico-thyroids (Fig2) cause the stretching of the vocal folds making them important contributors to changes in pitch.

In the anatomical literature, these muscles are often listed as extrinsic because they have an attachment to the outside of the larynx (Vennard, et al, 1971).

The muscles of the larynx are named for the cartilages to which they attach. The one with which singers are primarily concerned is the thyroarytenoid muscle or the vocalis muscle. The vocalis forms the body of each vocal fold. When it contracts