

Treatment of hyperkeratotic lesions, primarily focusing on corns with the aid of various techniques, mainly emphasizing on homeopathy- an overview.

Tratamiento de lesiones hiperqueratósicas, centrándose principalmente en los callos con la ayuda de diversas técnicas, con énfasis principalmente en la homeopatía: una descripción general

Dr Amreen Sumiyya R, Dr R.E. Shinde

1- Postgraduate scholar, Department of Repertory, Bharati Vidyapeeth (Deemed to be University), Homoeopathic Medical College and Hospital, Dept of Post Graduate and research centre, Katraj-Dhankawadi, Satara Road, Pune -411043. Email: [amreensumiyya@gmail.com](mailto:amreensumiyya@gmail.com), Mobile: +91-9620534801

2- Associate Professor, Department of Repertory, Bharati Vidyapeeth (Deemed to be University), Homoeopathic Medical College and Hospital, Dept of Post Graduate and research centre, Katraj-Dhankawadi, Satara Road, Pune -411043 Email: [rajshindedr@gmail.com](mailto:rajshindedr@gmail.com) Mobile: +91-9637206722

#### ABSTRACT

Corns are also known as localized plantar hyperkeratosis of skin, is one of the most common diseases in young adults and old people throughout the world. It falls under the category of superficial disorders occurring in the foot. It is caused by the hyperactivity of keratinocytes, that is to say, the hyperkeratotic activity of stratum corneum or rapid proliferation of keratinocytes, resulting in the formation of thickened layers of skin. The major mechanical cause for the development of corn is faulty footwear, congenital deformities in the foot viz... A mallet toe, hammertoe and claw toes. A broad forefoot that has been forcefully constricted in the toe box could be one of the most common causes for the development of Corn. The common symptoms associated with corn are pain, impaired mobility and limited functional activities. Common site of the appearance of Corn is palm, soles of feet, knees, balls of the heel. On assessment, it is observed that 14 -48 % of people experience the sufferings of Corn. 33-78% of older age group people over 75 years of age experience these hyperkeratotic lesions. Here we are going to discuss the existing literature describing various methods that are used while treating hyperkeratotic lesions, especially of Corn. The following literature concisely provides different procedures opted to excavate the Corn, either conservatively or operatively, using Homoeopathy or modern medicine respectively. In this review of the literature, we are going to exhibit the effectiveness of homoeopathic medicine over other conventional methods of treatment. This article will review a few of the literature work done under the condition of hyperkeratotic lesions mainly emphasizing the treatment of Corns by using various techniques in various systems of medicine.

Keywords: Corns, Corn excavation, hyperkeratotic lesions, Homoeopathic medicines, keratinocytes.

## RESUMEN

Los callos también conocidos como hiperqueratosis plantar localizada de la piel, es una de las enfermedades más comunes en adultos jóvenes y ancianos en todo el mundo. Se incluye en la categoría de trastornos superficiales que ocurren en el pie. Se produce por la hiperactividad de los queratinocitos, es decir, la actividad hiperqueratósica del estrato córneo o rápida proliferación de los queratinocitos, dando lugar a la formación de capas de piel engrosadas. La principal causa mecánica para el desarrollo del callo es el calzado defectuoso, deformidades congénitas en el pie, a saber... Un dedo en martillo, dedo en martillo y dedo en garra. Una parte delantera del pie ancha que se ha contraído con fuerza en la puntera podría ser una de las causas más comunes para el desarrollo de maíz. Los síntomas comunes asociados con el maíz son dolor, problemas de movilidad y actividades funcionales limitadas. El lugar común de aparición de Corn es la palma de la mano, las plantas de los pies, las rodillas y la punta del talón. En la evaluación, se observa que 14 -48 % de las personas experimentan los sufrimientos del Maíz. El 33-78% de las personas mayores de 75 años experimentan estas lesiones hiperqueratósicas. Aquí vamos a discutir la literatura existente que describe varios métodos que se utilizan en el tratamiento de lesiones hiperqueratósicas, especialmente de maíz. La siguiente literatura proporciona de manera concisa diferentes procedimientos optados para excavar el Maíz, ya sea de manera conservadora u operativa, utilizando la Homeopatía o la medicina moderna respectivamente. En esta revisión de la literatura, vamos a mostrar la efectividad de la medicina homeopática sobre otros métodos de tratamiento convencionales. Este artículo revisará algunos de los trabajos de literatura realizados bajo la condición de lesiones hiperqueratósicas, enfatizando principalmente el tratamiento de los callos mediante el uso de diversas técnicas en varios sistemas de medicina.

Palabras clave: Callos, excavación de maíz, lesiones hiperqueratósicas, medicamentos homeopáticos, queratinocitos.

## INTRODUCTION

Hyperkeratotic lesions such as corn are the dermatological conditions commonly treated in clinical practices. Corn is an area of Callus that has been moulded into a nucleus.<sup>[1]</sup> The treatment under these conditions varies from one system of medicine to another. In 1993, Springet has demonstrated a model of Corns and Callus formation, describing that when a sturdy and hard Callus develops, it produces a stressful environment in the keratinocytes and causes irritation and inflammation all over the dermal complex.

The Corn patients who are abstaining from the regular treatment by the conventional system of medicine are in preponderant. The only reason for this is the pain and hypersensitivity felt in and around the lesions and its tendency to reoccur. Hence there existed a major need to provide a non-invasive treatment to completely resolve the Corns.<sup>[1]</sup>

In 1954, Giannestras elucidated that most of these circumscribed lesions were assumed to be plantar warts, therefore termed it as plantar keratosis. The term intractable plantar keratosis was introduced by Mann and Duvaries to designate active/symptomatic plantar callosities which do not recover. In North America, this designated term plantar keratosis is popularly abbreviated as IPK (Intractable Plantar Keratosis). These IPK are mostly referred to as tyloma, plantar heloma, plantar Callus, keratoma, plantar Corn. In American literature,

the term Corn is defined as focal intractable keratosis, whereas the term localized Callus/diffuse IPK is explained as a larger lesion usually measuring over 1 cm and above, which does not contain a keratin plug.<sup>[2]</sup>

Before initiation of any treatment on IPK, the physician needs to differentiate the lesions on the plantar aspect, whether it is a Corn, a Callus or a wart. It can be done by palpation. The lesions that are more sensitive to tangential pressure or direct pressure can be described as Corn, and the lesions that are more sensitive to compressing pressure from the lateral side are warts.<sup>[3]</sup>

Clavus/Corn is formed when the skin experiences the pressure point in an elliptical or semi-elliptical pattern during the friction occurring between the foot and the footwear. The center point is at the pressure, and this pressure gradually widens. Higher the incidence of clavus at different sites, high is the indication of locomotor biomechanical abnormality.<sup>[7]</sup>

The dorsal lateral aspect of the fifth toe and the interdigital space between the 4<sup>th</sup> and the 5<sup>th</sup> toe is the most common site; irrespective of the location, the microscopic observations/histopathology is identical. These webspace lesions are often difficult to differentiate from mycotic infection, especially when there is a development of maceration due to perspiration.<sup>[4]</sup> An extrinsic pressure from adjacent toenail or bony prominence has been ascribed as a responsible factor for the development of an interdigital Corn.<sup>[4]</sup>

There are many techniques described in modern medicine which need not necessarily be compared with the Homoeopathic system of medicine. The homoeopathic mode of treatment provides a permanent and gentle way of approach in a very successful manner by reaching the root cause of the suffering. Surgery is the most commonly opted technique by a majority of patients since it provides instant relief from the pain and discomfort, but it is the least known fact that these hyperkeratotic lesions tend to reoccur on and around the same site or at a different site, with an increased risk of infection.<sup>[14]</sup>

The homoeopathic approach towards the treatment of Corn is done as described in the philosophy of Homoeopathy by Dr Samuel Hahnemann. It is mentioned in the aphorisms of "Organon of Medicine and Homoeopathic Philosophy" about the absolute way of extracting symptoms from the patients of any suffering through proper case taking. The main aim of Homoeopathic treatment is to restore the sick to health to cure as it is termed.<sup>[20]</sup> The selection of drugs in the Homoeopathic system of medicine depends on many factors which include presentation of the disease, constitutional, mental, physical and any rare, peculiar, strange or characteristic or miasmatic symptoms.<sup>[22]</sup>

#### Objective:

Preliminary research is done on the Treatment of Corns With The Aid Of Various Techniques, Mainly Emphasizing On Homoeopathy, by analysing and reviewing articles published by certain scholars. During the course of analysis and review of the articles, it is identified that plans of treatment for corn in Homoeopathy and modern medicine are scattered.

The main objective of this article is To present a consolidated work of various maneuvers in Homoeopathy and modern medicine for the treatment of corns.

To provide the reader with holistic and comprehensive techniques about the treatment of Corn in Homoeopathy and other conventional systems of medicine.

To elucidate the efficiency of treatment of Corns in the Homoeopathic system of medicine.

## MATERIALS AND METHODS

This work is mainly grounded on research done theoretically using the deep web search engine. Keywords such as hyperkeratosis, plantar hyperkeratosis, corn, Homoeopathic therapeutics for corn, a surgical technique to remove corn were used to obtain various scholarly articles. Pub med, Google Scholar, Medline, Research Gate, Google search engine, the standard textbook of dermatology, Homoeopathic therapeutics for dermatology and Homoeopathic software RADAR comprising of alphabetical Homoeopathic medical repertory by ROBIN MURPHY were used.

## RESULTS AND DISCUSSION

Let's initiate the term explanation, the term Corn is also referred to as Heloma Durum or the focal intractable plantar hyperkeratosis.<sup>[19][7]</sup> It is the hard, thickened areas that are developed as a result of frequent exposure of skin to excessive pressure or friction.<sup>[19]</sup> The Corns are the hyperkeratotic area on the skin occurring due to repeated physical trauma over the Epithelium and the impact of which remains for a prolonged period.<sup>[13]</sup> This condition is a form of callosity where the hyperkeratotic skin lesions are often described by using many confusing terminologies. The Corn and Calluses must properly be distinguished.<sup>[19]</sup> A well-demarcated focal hyperkeratotic area is called Corn.<sup>[16]</sup> Whereas the Calluses are the mere diffuse type of hyperkeratotic area.<sup>[2]</sup>

### Etiological Factor

This condition is most commonly seen in sportsmen, athletes,<sup>[2]</sup> in patients with gait problems,<sup>[14]</sup> bony prominence in the foot,<sup>[26]</sup> malfunctioning of bones in older adults, patients with diabetes and patients with an amputated foot. The contributing factors that are responsible for the development of Corn are ill-fitting footwear,<sup>[14]</sup> activities which bring on mechanical trauma to the foot constantly.<sup>[26]</sup>

### Site of Affection

The most commonly occurring site of Corn/plantar hyperkeratosis is the feet and palms. The most common location of their appearance will be on the backside of the toes (dorsum), in the last inter digital webspace, metatarsophalangeal joints and also anywhere on the soles, especially on the area of elevated plantar pressure. Corns are seen more prone to develop on darkly pigmented skin. It is seen predominantly in females, as they practice wearing narrow shoes.<sup>[18]</sup>

### Pathophysiology:

Examination of Corn regarding Histopathology is not required but occasionally it might help us to differentiate Corn and Calluses from other conditions viz plantar wart. On biopsy of Corn specimen, it is observed that there is

Presence of all epidermal layer proliferation.<sup>[19]</sup>

Absence of granular cell layer.<sup>[19]</sup>

The dense fibrous tissue with hypertrophical nerves is observed in the dermis.<sup>[23]</sup>

Constant friction over the surface of the skin triggers mitosis in the layer of stratum basale and stratum spinosum; as a result, there appears a formation of Callus which provides extra protection towards the soles and palms.<sup>[24]</sup>

The nucleus or the radix which is also otherwise called the center of the Corn is the point of maximum stress which shows the secondary vascular change and fibrosis. Due to chronic mechanical forces focused on a particular area of the skin, the stratum corneum gets impacted with the formation of a hard plug of keratin that puts pressure into the papillary dermis, which is termed as radix or nucleus.<sup>[14][13]</sup>

The Stratum Corneum shows marked hyperkeratosis. The pain in the Corn is because of the hard conical pointing structure which is exerting pressure on the surrounding nerves.<sup>[13]</sup>

Articles:

Homoeopathic Articles

Following are the few articles which enable us to understand the various types of prescription in Homoeopathy

In 2015, Nishant et al Successfully treated two cases of patients suffering from Corn. 1<sup>st</sup> case is a male patient complaining of painful multiple Corns on the plantar surface of both the foot. He was advised by the surgeon to go for surgery. He was then treated with Sulphur 200 single-dose which was followed by Antimonium crud 30 TDS for 7 days. He found that Corn was cured within 10 days, later did not reappear. 2nd case was the daughter of the first case, complaining of single painful Corn in the plantar aspect of the left foot. She tried various modes of treatment including corn caps, she found no relief, she was then prescribed the same medication as his father 15years ago, and within one month she was resolved from the suffering of Corn and never reappeared. *Nishant et al*, explained that a genetic Similimum Sulphur and Antimonium Crudum is mostly required to get permanent relief from the suffering, he followed the same way of treatment to the daughter as given to her father 15 years ago for the same suffering of Corn. He concluded that a genetic similimum or a constitutional medicine is required to annihilate any disease that is carried in the family. He attempted to show the pathogenetic trails of Sulphur and Antimonium Crudum playing a definitive role in hyperkeratosis of skin and can be used constitutionally to those people who carry thick skin.<sup>[13]</sup>

In 1996 M.Taufiq khan et al Conducted a double-blind placebo-controlled trial on thirty adult patients suffering from the hyperkeratotic lesion (Corn and Callus), all the patients before undergoing trial were scheduled for their surgical removal of Corn and Callus, this trial was conducted to determine the efficacy of topical tageteserecta(African marigold). The study was conducted for 8 weeks, out of which the first four weeks were dedicated to treating the Corn and the rest of four weeks were kept for observation. Patients were given diary to record their pain symptoms throughout the trial period. Patients were asked assess the size of their lesion on every visit before the treatment. Patients were divided into three different groups with 10 members in each group. Group A - Topical marigold therapy with a protective pad. Group B - Topical placebo and a protective pad. Group C -Topical marigold therapy without a protective pad. A topical preparation of marigold was done according to the Homoeopathic Pharmacopoeia of the US, and the Homoeopathic Pharmacopoeia of podologists. Group A and B-semi compressed cavity pad +marigold or placebo paste in the cavity. Group C- applied marigold paste only, no cavity pad. In comparison to Group B,

there was a significant reduction in Callus length, width and pain. ( $p < 0.0001$ ). *M. Taufiq Khan et al* concluded Group A and B showed a significant reduction in Corn and Callus compared to group C. He concluded that the protective pad in combination with marigold treatment showed significant results in improvement of Corn and Callus.<sup>[1]</sup>

In 2016 Gogoi Modit ranjan et al Show the improvement of a patient suffering from Corn who was previously treated by surgery with an unsuccessful result. A 42-year-old male whose physical appearance is lean thin weak with an irritable mind and unease feeling due to severe pain in the Corn which found to be appearing in the plantar surface of the little toe. He was prescribed Antimonium Crudum 200 3doses based on his presenting totality of symptoms, with a gradual improvement in his symptoms, and concluded that the patient was successfully treated by a research-based Homoeopathic medicine Antimonium Crud200, with complete relief from his symptoms after which the Corn did not reappear.<sup>[11]</sup>

In 2021 Dr.siddhesh Ramakanth Ranade et al Gives the details about the introduction of Corn, the author has mentioned the cause for hyperkeratosis and thickening of the skin is due to the intermittent pressure and frictional forces. In his study, he explored the scope and efficiency of the Homoeopathic remedy Silicea in the management and treatment of Corn. He explained about the epidemiological study which evaluates the prevalence of Corn amongst samples of adults of the northeast United States which revealed a significant difference in rates of corn in ethnic groups. He has stated that African Americans have higher rates of Corn and calluses compared with non-African whites and Puerto Rican participants (70%vs 58%vs34%). He also estimated the statistics of Corns and calluses in the Indian population which goes like this 25,525,755 per 1,055,070,507. He says that hyperkeratotic lesions of the foot have affected 20 - 75% of the older population aged around 75 years. He concluded that Homoeopathic remedies effectively remove Corn from its root with a very gentle approach. He has commonly used Antimonium Crudum, nitric acid, Silicea, Hepar Sulph, lycopodium and Ranunculus bulbosus for the treatment of corns. He concluded that Silicea is the top grade remedy for Corns. Silicea seems to be excellently working in patients with soft Corn. It was prescribed for the symptoms of sore painful Corn occurring between toes with the tendency to suppurate and produce offensive odour from the foot.<sup>[15]</sup>

In 2020, Dr Sneha John Has described in her article about Corn and Callus definition, aetiology, its types, pathogenesis, clinical features, diagnosis and differential diagnosis, distinguishing features of the wart and plantar Corn, preventive measures, miasmatic analysis, and its Homoeopathic management using the drug-like Antimonium Crudum, Thuja, Sulphur, Silicea, lycopodium, Ferrum picricum, Ran bulb, Nitric acid.<sup>[16]</sup>

In 2018 Dr. Lamba P.D et al Listed some of the majorly used remedies in the treatment of Corns like Ferrum pic, Ruta, Hypericum, Thuja, Causticum, Sulphur, ranunculus bulb, anti-crud, lycopodium, Silicea, Hepar Sulph, Ruta. A case report of a 27 yr old male patient which was recorded in February 2018 has been discussed in the article, considering the particulars and physical generals he repertorised the case using zomoeo software, where Sulphur appeared to be the most indicated remedy. He prescribed Sulphur 30 single dose, and the follow-up of the case was done after 8 days with the betterment of all the presenting complaints, in the 2nd follow-up patient showed marked improvement

of all the suffering. He finally concluded that Sulphur and Silicea are the choice of remedy to be prescribed, since Silicea is thermally chilly he chose to prescribe Sulphur.<sup>[14]</sup>

In 2019 Anil Kumar Vangani et al Described the management of Corn conservatively by using the intercurrent anti miasmatic remedy and by advising them on using proper footwear. A case study Corn and Callus has been managed by understanding the mechanical aetiology and providing symptomatic relief, by formulating a conservative treatment plan where a Homoeopathic constitutional remedy and an anti miasmatic remedy have been used to treat as well as to prevent reoccurrences, along with advice on appropriate footwear, considering surgery as an option if conservative measures fail. The author has discussed a case of Corn on the fourth and fifth toes of the right leg which was lasting for 7 months; a complete detailed case history was recorded. A further case was analysed and evaluated for repertorization. The remedy prescribed was nux vom 200 1dose, which was followed up after two months with a reduction in all her suffering, due to the presence of itching and eruptions, further, the case was followed by Sulphur 200, with a complete recovery of the Corn on her foot.<sup>[7]</sup>

In 2008 Vlahovic et al Has given the reference of the Foot and Ankle journal where it has mentioned the usefulness of the marigold therapy while conducting numerous randomized double-blind placebo-controlled studies. It has been mentioned that the species of marigold carries the property of being antiviral, anti-inflammatory, and keratolytic. Marigold therapy provides a gentle and non-invasive treatment for the conditions like inflamed bursa secondary to halluxabducto valgus, painful hyperkeratotic lesions and hallux abducto valgus. Hyperkeratotic lesions: the topical therapy for the hyperkeratotic lesion has been successfully treated with marigold based paste for quite many years in the United Kingdom.

Vlahovic et al Used the reference of *M. Taufiq khan et al* work with tagetes species and explained its ability to inhibit cell activity at the level of stratum corneum. A chemical known as tagetone in tegetes has worked as a catalyst in inhibiting the rapid multiplication and transmission of keratinocytes. A double-blind placebo-controlled trial has been conducted in 1996 on 30 patients suffering from painful plantar hyperkeratosis, the details of this study have been described in this article<sup>[1]</sup>

In 2001 Davies Christopher S et al Intended to show the efficacy of using plant extract of marigold tegetes patula in the management of chronic, painful, plantar Corn and Callus. A case study of chronic fibrous plantar Corn with a history of various treatments such as chemical, thermal, caustic and the latest being the silicone method, with absolutely no relief from his suffering is done. *Davies Christopher S et al* resolve the patients suffering by the application of the Homoeopathic regime, which is the extract of the marigold (tegetes patula). The patient was asked to report and record the symptoms after each application marigold (tegetes patula). The changes in the size of the Corn were assessed using visual pain analogue scale. It was analysed that the patient was showing deeper Callus reduction and enucleation of Corn. It was observed that the frequency of reappearance of symptoms as well as the size of the Corn was reduced. And finally concluded that the application of the marigold treatment has successfully treated the patient to lead a pain-free life.<sup>[17]</sup>

Robin Murphy 3rd revised Edition This homoeopathic medical repertory is the revised edition which is currently popular as the Homoeopathic medical repertory. The latest edition of this repertory is the third edition which has been designed in such a way that it makes the repertory a complete updated version of the

second edition. Robin Murphy has always attempted to create a new and easy way of repertorization for practising Homoeopaths. This latest edition has new remedies in hundreds and new rubrics in thousands. This repertory by robin Murphy is the updated and clinical and easy guide for the huge materia medica. The third edition is the result of a systematic survey of the Homoeopathic literature to produce reliable work. In this repertory, we can easily explore different remedies under different scenarios of patient's presentation of symptoms. Robin Murphy in his repertory has concisely described the various presentation of Corn with their remedy at a glance.<sup>[21]</sup>

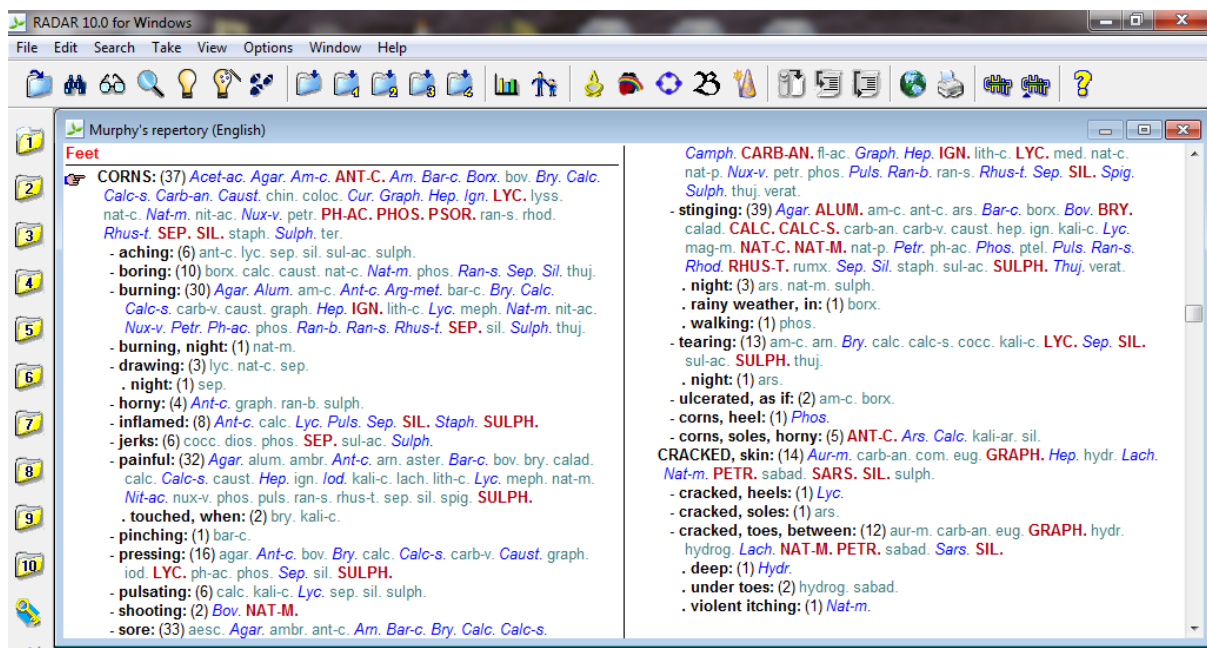


Figure 1: Radar 10 – Murphy Repertory 3<sup>rd</sup> Edition Chapter Feet <sup>[27]</sup>

### Modern Medicine Articles

Following are the various articles of modern medicine describing various techniques for Corn excavation.

In 2009 Martin J spink et al Show prevalence of Corn and Callus in an older patient over sixty-five years affecting about 33 - 78%. It is found that the most common site of affection is under metatarsophalangeal joints, elevated plantar pressure. A study conducted on 292 older-aged participants reported a significant rise in pressure on the plantar region especially the callused part on the forefoot, except 1<sup>st</sup> MPJ. This study was conducted to show the characteristic pattern of lesion distribution on different foot types, this distribution is influenced by variables like footwear, toe deformities. Bodyweight, dominant foot.<sup>[18]</sup> There were 4 studies conducted on the prevalence of hyperkeratotic lesions.

292 participants, older people - common site to be the 1<sup>st</sup> MPJ, followed by 2<sup>nd</sup> MPJ then hallux

319 participants, 20 to 99 years- common site 2<sup>nd</sup> MPJ (37%) followed by 1<sup>st</sup> MPJ (27%) and the 5<sup>th</sup> MPJ (13%).

115 participants, male runners – common site, 2<sup>nd</sup> MPJ (32%) followed by 1<sup>st</sup> MPJ (23%) and 5<sup>th</sup> MPJ (13%).



243 participants- common site 2nd (10%), 3<sup>rd</sup> and 4th MPJ.<sup>[18]</sup>

In 2018 Chi-Yu Wang et al Has emphasized the utility of reconstructive surgery where an attempt to show the effectiveness of reconstructing the wound which has occurred after the excision of Corn using the procedure of SPLIT THICKNESS SOLE SKIN GRAFT (STSSG). Skin grafting is done from the arch of the sole by using the dermatome with the thickness of 14/1000<sup>th</sup> inches which is around 0.3557 mm. the authors have opted for the distal sole arch than the thigh area for STSSG because of its thickness and weight-bearing capacity and its resistance towards friction. It is observed in the follow-up of patients for 3 months that the STSSG area is intact, and the donor site of the sole arch is also healed without complication. Finally, the author has concluded that the recovery time after Corn excision is shorter than that of the traditional treatment. Hence it is the most reliable alternative treatment for repeated affection of hyperkeratosis of palms soles.<sup>[12]</sup>

In 2009 Bae JM et al Has differentiated the plantar wart from Corn and calluses by using the instrument dermoscopy. It is one of the simple inexpensive non-invasive techniques to diagnose morphological feature which is invisible to the naked eye. Thus, it acts as a bridge between micro and macroscopic dermatopathology. Authors suggest the huge potentiality of using dermoscopy while interpreting various skin diseases. A study was conducted on 48 patients with 111 lesions on the plantar surface of the foot and was assessed with help of a dermoscope to differentiate the lesions from warts, Corn and Callus, then followed by treatment of each condition. 38 patients with 98 lesions were diagnosed with viral warts using dermoscopy, showed up similar black to red spots which are in globulous form, and projection on the surfaces and skin lines that are interrupted. It is observed in a few that some lesions after trimming predominantly showed red linear vessels. In 7 patients with 9 lesions exhibited a central core that is translucent in appearance which is termed as a nucleus in the Corn. Few other patients exhibited opaque surfaces which were diagnostic of Callus. 38 patients with 98 lesions of viral wart were treated with cryotherapy by using the dermoscopic aid.

To naked eyes, few lesions appeared to be completely healed but on dermoscopy, it was seen that there is some papilliform on the surfaces, which resolved completely by using one more cryotherapy session.

In nine patients four lesions failed to resolve completely. Three patients with 8 lesions complained of recurrence.

Finally, the author concluded that most of the lesions were healed within the four sessions of cryotherapy, and with the help of dermoscopy, it was made easy to differentiate between wart, Corn and calluses.<sup>[6]</sup>

In 1984 Michael J. Coughlin Described Corn and its treatment he referred to hard Corn as the formation of thick Callus over the lateral surface of the fifth toe, and the soft Corn is developed due to pressure exerted between the webspace of lesser toes. The most common cause of the development of Corn is forcing the broad forefoot into the small constricted toe box or shoes. According to the author, the conservative treatment is shaving the keratotic lesions and reducing the pressure by placing doughnut-shaped foam pads between the toes. It can be corrected either by shaving the bony exostosis or by underlying joint exostosis. The soft Corn when treated surgically, the incision must be done away from the lesion in the webspace since the healing is slow in this region. Finally, the author concluded that conservative care includes foam pads, shaving the lesion, proper footwear, at times there may be a requirement of surgery.<sup>[9]</sup>

In 2012 Sacchidanand S et al Described the effective and simple technique for the excision of Corn. Preoperative procedures are done to transfer a hard Corn to less hard Corn till the central core or the kernel of Corn is visible followed by a punch biopsy which involves the central part of the core with a slow and gradual half-circular motion is pushed into the tissue. Before the start of this procedure, the patient is advised to inform the surgeon regarding the sensation of intense pain at a particular point. The Adson's toothed forceps is used to gradually pull out the punched-out tissues. By this procedure, the central core which was intact is completely excised. This technique is used on six patients who are followed up for 3 months without recurrence at the site of the excised lesion. Sacchidanand S et al has finally concluded by describing the advantages of the procedure by saying it is simple and safe with minimally invasive and less messy technique and also with minimal blood loss.<sup>[8]</sup>

In 2002 Denise B. Freeman Described basics of plantar hyperkeratosis Corn and Callus. He attempted to explain the definition, cause, deformities of lesser toes, pathogenesis and treatment procedure required for removal of Corn and calluses. While explaining the treatment he briefed about a few procedures like understanding and determining the aetiology, providing symptomatic relief, padding, footgear, and surgery if corns and Callus are not getting resolved conservatively.<sup>[3]</sup>

In 2014 Sule Gungor et al Conducted a retrospective study to describe the management of hard Corn through punch incision technique using a blade which is circular attached to a pencil-like handle, serving as an alternative technique to the surgical excision of corns. A total number of 15 patients were evaluated with corns that are recalcitrant using the punch incision technique during the period between 2011 to December 2012. 3 out of 17 corns were persisted, out of 17 corns, 2 of them partially responded, 12 out of 17 corns responded successfully to the punch incision method.<sup>[25]</sup>

Conflict Of Interest:

No conflict of interest

Financial support and sponsorship:

Nil.

## CONCLUSION

Modern medicine treats corns surgically and conservatively, which suppresses the suffering with the tendency to reoccur. The modern medicine article has described an invasive method of treatment of corn with a prolonged period of recovery and less assurance towards its recurrence. Whereas the articles under the homoeopathic system of medicine describe the non-invasive method of treatment of corn with a short period of recovery and with no recurrence. Clinically, Homoeopathic medicines have proved very effective while treating Corn, but furthermore, research needs to be done. It is an art and skill of homoeopaths to manage individuals suffering from corns, the result of the treatment will be fruitful only when the prescription is based on an appropriate selection of most similar medicine, and with the right potency, followed by prescription of constitutional remedy. To get the best result, a bit of strict advice regarding proper preventive measures is very essential along with the similimum. When the case is not showing any sort of improvement despite various suitable remedies, it is advisable to opt for surgery or any modern medicine techniques.

#### ACKNOWLEDGMENTS

I express my sincere gratitude to honourable Dr Mr. Avinash R Mehtre, Principal, Bharati Vidyapeeth Deemed University, Homoeopathic Medical College, and Hospital Pune, for granting permission to carry out the study of the review article.

I express my heartfelt thanks and gratitude to my guide and co-author Dr Rajendra Eknath Shinde, Associate Professor, Department of Repertory. Dr Anita S Patil, Head of Department, Department of Repertory, Bharati Vidyapeeth Deemed University, Homoeopathic Medical College, and Hospital Pune, for their constant and unconditional support, guidance, and encouragement to carry out the study of review article.

Also, I would like to thank my family and colleagues for their moral support and guidance.

#### REFERENCES

1. Khan M, Potter M, Birch I. Podiatric Treatment of Hyperkeratotic Plantar Lesions with Marigold *Tagetes erecta*. *Phytotherapy Research*. 1996;10(3):211-214.
2. Dishan singh, George Bentley, Saul G Trevino. Fortnightly Review, Callosities, Corns, and Calluses. Institute of orthopaedics, Royal National orthopedic Hospital, Stanmore, Middle sex, Baylor College Of Medicine, Houston, Texas. 1996;312:1403-6.
3. Freeman DB. Corns and calluses resulting from mechanical hyperkeratosis. *Am Fam Physician*. 2002 Jun 1;65(11):2277-80.
4. Coughlin M, Kennedy M. Operative Repair of Fourth and Fifth Toe Corns. *Foot & Ankle International*. 2003; 24(2):147-157.
5. Vlahovic T. The Use of Marigold Therapy for Podiatric Skin Conditions. *The Foot & Ankle Journal*. 2008; 1(7).
6. Bae JM, Kang H, Kim HO, Park YM. Differential diagnosis of plantar wart from Corn, Callus and healed wart with the aid of dermoscopy. *Br J Dermatol*. 2009 Jan;160(1):220-2.
7. Dr. Anil Kumar Vangani, Dr. Harshal Juneja efficacy of homoeopathic *similimum* in *clavus* disease – a case study, *International educational Applied Research Journal*, vol 03, Issue 07, July 2019 E-ISSN:2456-6713.
8. Sacchidanand S, Mallikarjuna M, Purohit V, Sujaya SN. Surgical enucleation of Corn: a novel technique. *J Cutan Aesthet Surg*. 2012;5(1):52-53.
9. Coughlin MJ. Mallet toes, hammer toes, claw toes, and corns. Causes and treatment of lesser-toe deformities. *Postgrad Med*. 1984 Apr; 75(5):191-8.
10. Scranton PE Jr. The management of superficial disorders of the forefoot. *Foot Ankle*. 1982 Jan;2(4):238-41.
11. Dr. Gogoi modit ranjan, Dr. Sarma Tikendrajit. Corn and Homoeopathic Treatment: Case report, *Scholar Journal of Applied medical Sciences*, 2016;4(5c):1669-1671
12. Wang CY, Chang CK, Chou CY, Wu CJ, Chu TS, Chiao HY, Chen CY, Chen TM, Tzeng YS. Successful Treatment of Plantar Hyperkeratosis in the Form of Recurrent Corns with Split-Thickness Sole Skin Graft. *Ann Plast Surg*. 2018 Feb; 80(2S Suppl 1):S55-S58.
13. Nisanth Nambisan KM, Nambisan SN. Homoeopathic treatment of *Heloma durum*-Case Report. *Indian Journal of Research in Homoeopathy*. 2015;9(3):194.

14. Dr .Lamba P.D,Dr.Ayush kumar. Homoeopathic treatment of multiple Corn: A case Report.International Journal of creative research thought (IJCRT).VOL 6,2 April 2018.
15. Dr.Siddhesh Ramakanth Ranade,Dr.shankar Hulekar, common Skin disease “corns” with effective Homoeopathic medicine “silicea”. International journal of Homoeopathic sciences 2021;5(2):09-10.
16. Dr.Sneha john, Corns and its Homoeopathic management, Team Homoeopathy 360, 2020.
17. Davies,Christopher S., Murgatroyd.M. Marigold therapy (Tegetes Patula) for chronic fibrous Corn and Callus –A case study .In society of chiropodists and podiatrists International conference, Harrogate UK.
18. Spink MJ, Menz HB, Lord SR. Distribution and correlates of plantar hyperkeratotic lesions in older people. J Foot Ankle Res. 2009 Mar 30; 2:8.
19. Aboud A, Yarrarapu S. Corns [Internet]. Ncbi.nlm.nih.gov. 2022 [cited 5 February 2022]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470374/#:~:text=A%20corn%2C%20also%20known%20as,to%20friction%20or%20pressure%20forces>
20. Hahnemann S, Hahnemann S. Organon of medicine. 6th ed. Germany: W.F Wakeman; 1833.
21. Murphy R. Homoeopathic medical repertory. 3rd ed. New Deli: B. Jain; 1998.
22. R.K.Manchanda R. Text book of dermatology for Homoeopaths. 4th ed. New Delhi: B.Jain Publishers; 2019.
23. Waller K. Why Has My Corn Come Back? - Compleet Feet [Internet]. Compleet Feet. 2022 [cited 5 February 2022]. Available from: <https://www.compleetfeet.co.uk/why-has-my-corn-come-back/>
24. Skin. Structure of skin. Epidermis. Dermis. Hypodermis [Internet]. Encyclopedia.lubopitko-bg.com. 2022 [cited 5 February 2022]. Available from: <http://encyclopedia.lubopitko-bg.com/structureofskin.html>
25. Güngör ş, Bahçetepe N, Topal İ. Removal of corns by punch incision: A retrospective analysis of 15 patients. Indian Journal of Dermatology, Venereology, and Leprology. 2014;80(1):41.
26. Silverberg, N. Corns (Clavus): Background, Pathophysiology, Etiology [Internet]. Emedicine.medscape.com. 2022 [cited 5 February 2022]. Available from: <https://emedicine.medscape.com/article/1089807-overview>
27. RADAR 10 Homoeopathic software

Received: 20<sup>th</sup> January 2023; Accepted: 20<sup>th</sup> March 2023; First distribution: 23<sup>th</sup> April 2023