

# The tricky “trichs” in dermatology!

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The word “trich” is derived from the Greek word “*thrix*” which means pertaining to hair. Hence, terminologies or medical words starting with “trich” are related to hair more often than not. However, there are also “trichs” which are unrelated to hair. Since the terminologies are extensive and are spread across the literature related and unrelated to hair, authors have attempted to arbitrarily classify and club these into various groups for the sake of convenience.

## Classification [Table 1]

### Hair disorders

1. Trichoclasia<sup>1</sup> – It is the common green stick fracture of the hair shaft, characterized by a transverse fracture of the hair shaft which is splinted partly or completely by intact cuticle.
2. Trichorrhexis nodosa<sup>1</sup> – It is a hair shaft disorder characterized by breach in the cuticle with separation and fraying of the exposed cortical fibers which leads to a node-like swelling.
3. Trichorrhexis invaginata (bamboo hair)<sup>1</sup> – It is a rare abnormality of hair shaft, in which the defect is in its keratinization allowing intussusception of the fully keratinized and hard distal shaft into the incompletely keratinized and soft proximal portion of the shaft. It leads to the typical “ball and socket” deformity. It is a diagnostic marker of Netherton syndrome although it can be seen in other hair disorders.
4. Trichoschisis<sup>1</sup> – It is a clean transverse fracture of the hair shaft in an area of focal absence of the cuticle. It is usually associated with sulfur-deficient hair in trichothiodystrophy.
5. Trichothiodystrophy<sup>2</sup> – It is a rare disorder characterized by sulfur deficient, brittle hair along with wide range of clinical manifestations. Under light microscopy with polarization, “tiger tail” appearance is seen.
6. Trichomalacia<sup>3,4</sup> – Trichomalacia refers to the distortion and breaking up of the hair shaft with clumping of melanin. It is the most characteristic histological finding in trichotillomania.
7. Trichonodosis<sup>5</sup> – It is characterized by knotted hair on the distal portion of the hair shaft which may be spontaneous or secondary to mechanical factors such as vigorous scratching or combing the hair.
8. Trichopoliodystrophy (Menke’s disease)<sup>6</sup> – It is a X linked recessively inherited syndrome characterized by severely retarded mental and physical development, convulsions, abnormalities of the hair, bones and arteries. It is caused by an inborn error of copper metabolism. The hair are light colored and kinky in morphology.
9. Trichoptilosis<sup>7</sup> – It is a term for “split ends” which is an inherent component of weathering.
10. Trichostasis spinulosa<sup>7</sup> – It is an age-related phenomenon, in which successive telogen hairs are retained in predominantly sebaceous follicles. The lesions closely resemble comedones and have predilection for nose, forehead and cheeks although nape of neck, back, shoulders, upper arms and chest may be affected.
11. Xanthotrichia<sup>8,9</sup> – Xanthotrichia or yellow hair has been determined to be caused predominantly by exogenous chemicals such as selenium sulfide 2.5% shampoo and dihydroxyacetone.
12. Leukotrichia<sup>10</sup> – Depigmentation of hair within vitiligo macules. It indicates destruction of the melanocyte reservoir within the hair follicle, therefore predicting a poor therapeutic response.

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Access this article online	
Quick Response Code:	Website: www.ijdvl.com
	DOI: 10.4103/ijdvl.IJDVL_1019_16

## Psychiatric Disorders [Table 2]

### Infections

1. Trichomycosis axillaris (trichobacteriosis and trichomycosis nodosa) and trichomycosis pubis<sup>21-23</sup> – It is a bacterial infection of hair shaft seen in axillary and pubic area,

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**How to cite this article:** Kuntoji V, Kudligi C, Bhagwat PV, Asati DP, Bansal A. The tricky “trichs” in dermatology!. Indian J Dermatol Venereol Leprol 2018;84:109-13.

**Received:** December, 2016. **Accepted:** March, 2017.

**Table 1: Arbitrary classification of various terminologies comprising of “trich”**

Categories	Trichs
Hair disorders	Trichoclasia, trichorrhexis nodosa, trichorrhexis invaginata, trichoschisis, trichothiodystrophy, trichomalacia, trichonodosis, trichopoliodystrophy, trichoptilosis, trichostasis spinulosa, xanthotrichia, leukotrichia
Psychiatric disorders	Trichodynia, trichopathophobia, trichotillomania (trichotillois), trichophagia, trichorhizophagia, trichoteiromania, trichotemnomania, trichorrexomania or trichocryptomania, trichodaganomania, trichobezoar, trichophytobezoar
Infections	Trichomycosis axillaris (trichobacteriosis, trichomycosis nodosa) and trichomycosis pubis, trichomycosis nodularis, trichosporosis nodosa, trichodysplasia spinulosa
Tumors, hamartomas, cysts	Trichilemmoma (tricholemmoma), proliferating trichilemmal tumor, trichilemmal carcinoma, trichoadenoma of Nikolowski, trichoblastoma, trichodiscoma, trichoepithelioma, trichofolliculoma, trichilemmal cyst, trichomatricoma
Syndromes	Tricho-dento-osseous syndrome, tricho-hepato-enteric syndrome, tricho-odonto-onycho-dermal syndrome, tricho-retino-dento-digital syndrome, tricho-rhino-phalangeal syndrome, odonto-trichomelic syndrome, oculotrichodysplasia, odonto-tricho-ungual-digital-palmar syndrome, manitoba-oculo-tricho-anal syndrome, tricho-oculo-dermo-vertebral syndrome, trichodental syndrome, trichodysplasia-amelogenic imperfecta, oculo-tricho-dysplasia neutropenic syndrome trichomegaly-retina pigmentary degeneration-dwarfism syndrome
Diagnostic/procedural	Trichoesthesiometer, trichographism, trichogram, phototrichogram, trichoscopy, trichoscan, cross-sectional trichometry, trichometric index, trichophytic closure
Miscellaneous	Hypertrichosis, hypotrichosis, atrichia, trichomegaly, trichiasis, trichosiderin, trichohyalin, trichology trichorrhea, trichopathophobia, trichopathy, trichomadesis
Not pertaining to hair	Trichophyton, trichophylin test, trichrome stain, trichomoniasis, trichinosis, trichophytic granuloma, trichloroacetic acid, trichrome vitiligo

characterized by asymptomatic nodular thickenings composed of colonies of aerobic *Corynebacterium* Species.

2. Trichomycosis nodularis (black piedra)<sup>24</sup> – It is a fungal infection (caused by *Piedraia hortae*) confined to hair shafts which results in the formation of hard, dark, superficial nodules. It is more common on the hair of scalp.
3. Trichosporosis nodosa (white piedra)<sup>24</sup> – It is a fungal infection (caused by *Trichosporon* species such as *Trichosporon beigeli*, *Trichosporon ovoides*, *Trichosporon inkin*, *Trichosporon asahii* and *Trichosporon mucoides*) confined to hair shafts which results in the formation of soft, white, gray or brown superficial nodules. It is more common on the hair of beard, moustache and genital areas.
4. Trichodysplasia spinulosa<sup>25</sup> – It is a rare condition caused by infection of the inner root sheath of the hair follicle by a polyomavirus in immunocompromised patients.

#### Tumors, hamartomas, cysts<sup>26-29</sup>

1. Trichilemmoma (tricholemmoma) – A benign tumor derived from external root sheath epithelium of a hair follicle,

**Table 2: Terminologies of psychiatric disorders containing “trich”**

Trich	Description
Trichodynia <sup>11</sup>	Pain, discomfort and/or paresthesia in the skin of the scalp
Trichopathophobia <sup>12</sup>	An abnormal fear of getting hair disease
Trichotillomania (trichotillois) <sup>13</sup>	A compulsive desire to pull out one’s own hair
Trichophagia <sup>13</sup>	Compulsive eating of whole hair
Trichorhizophagia <sup>13,14</sup>	The hair root alone may be eaten as a secretive activity
Trichoteiromania <sup>15,16</sup>	Artificial hair loss results from perpetual rubbing of the scalp
Trichotemnomania <sup>16</sup>	The hair is usually cut with scissors or shaved, and the diagnostic key is the presence of follicle openings with filled hair shafts within a healthy-looking scalp
Trichorrexomania or trichocryptomania <sup>17</sup>	Compulsive action of cutting the hair with the nails
Trichodaganomania <sup>18</sup>	It is the habit of biting one’s own hair
Trichobezoar <sup>19</sup>	It is mass of undigested hair within the gastrointestinal tract
Trichophytobezoar <sup>20</sup>	Uncommon foreign bodies, formed by hairs and vegetable matter with impacted food particles

consisting of cells with pale-staining cytoplasm containing glycogen. Multiple trichilemmomas are present on the face in Cowden’s disease.

2. Proliferating trichilemmal tumor – A tumor of external root sheath derivation usually arising in a preexistent pilar cyst. Malignant change has been rarely reported.
3. Trichilemmal carcinoma – A rare malignant neoplasm of external root sheath with low metastatic potential, usually arising in sun-exposed skin of elderly. It may arise from a trichoblastoma or nevus sebaceous.
4. Trichoadenoma of Nikolowski – It is a rare benign tumor with multiple cystic structures closely resembling the infundibular portion of the hair follicle. It is thought to originate from pluripotent stem cells present within cutaneous appendageal structures and show follicular differentiation.
5. Trichoblastoma – It is a small benign hair follicle tumor originating from follicular germinative cells. Trichoepithelioma and giant trichoepithelioma (including its variant giant melanotrichoblastoma) represent the more mature end of the spectrum of trichoblastoma.
6. Trichodiscoma – It is a tumor of hair disc. Multiple trichodiscomas, trichofolliculomas and acrochodon-like lesions as well as perifollicular fibromas have been described as a part of the Birt–Hogg–Dube syndrome.
7. Trichoepithelioma – A hamartoma of the hair germ composed of immature islands of basaloid cells with focal primitive follicular differentiation and induction of a cellular stroma. Multiple trichoepitheliomas, cylindromas and spiradenomas constitute Brooke–Spiegler syndrome.
8. Trichofolliculoma – It is regarded as a hamartoma of the pilosebaceous follicle which results in several hairs being formed within the follicular opening and all protruding onto the epidermal surface from a single pilosebaceous orifice.

9. Trichilemmal cyst (pilar cyst) – Trichilemmal cysts are common intradermal or subcutaneous cysts; >90% of which occur on the scalp. They contain keratin and its breakdown products and are lined by walls resembling the external (outer) root sheath of the hair.
10. Trichomatricoma (pilomatricoma, pilomatrixoma, calcifying epithelioma of Malherbe) – It is a tumor derived from hair matrix cells. It presents as a solitary, skin colored or bluish, firm, cystic nodule on head, neck or proximal upper extremities. It displays a “tent-sign” and “teeter totter sign.” Multiple lesions are seen in Gardner’s syndrome, myotonic dystrophy, Rubinstein–Taybi and Turner syndrome.

### Syndromes

1. Tricho-dento-osseous syndrome<sup>30</sup> – It is a rare autosomal dominant disorder characterized by curly hair, enamel hypoplasia, taurodont teeth and thickened cortical bone
2. Tricho-hepato-enteric syndrome<sup>31</sup> – It is transmitted in autosomal recessive fashion. The classical form is characterized by five clinical signs: intractable diarrhea of infancy beginning in the 1<sup>st</sup> month of life; facial dysmorphism characterized by prominent forehead and cheeks, broad nasal root and hypertelorism; hair abnormalities described as woolly and easily removable hair; immune disorders and intrauterine growth restriction
3. Tricho-odonto-onycho-dermal syndrome<sup>32</sup> – It is a rare form of autosomal recessive ectodermal dysplasia involving hair, teeth, nails and skin characterized by hair anomalies such as hypotrichosis and slow-growing hair, hypodontia, smooth tongue with marked reduction of filiform and fungiform papillae, nail dysplasia, dry skin, palmoplantar keratoderma and hyperhidrosis of palms and soles
4. Tricho-retino-dento-digital syndrome<sup>33</sup> – It is an autosomal dominant ectodermal dysplasia syndrome, characterized by uncombable hair, congenital hypotrichosis and dental abnormalities such as oligodontia or hyperdontia and associated with early-onset cataract, retinal pigmentary dystrophy and brachydactyly & brachymetacarpia
5. Tricho-rhino-phalangeal syndrome<sup>34</sup> – It is characterized by craniofacial and skeletal abnormalities. Three subtypes have been described: tricho-rhino-phalangeal syndrome I, tricho-rhino-phalangeal syndrome II and tricho-rhino-phalangeal syndrome III. Features common to all three types are sparse, slowly growing scalp hair, laterally sparse eyebrows, a bulbous tip of the nose and protruding ears. Highly characteristic are the long flat philtrum and the thin upper vermillion border. The most typical radiographic findings in tricho-rhino-phalangeal syndrome are cone-shaped epiphyses, predominantly at the middle phalanges
6. Odonto-trichomelic syndrome<sup>35</sup> – It is characterized by malformations of all four extremities, hypoplastic nails, ear anomalies, hypotrichosis, abnormal dentition, hyperhidrosis and nasolacrimal duct obstruction
7. Oculotrichodysplasia<sup>36</sup> – It is characterized by retinitis pigmentosa, trichodysplasia, dental anomalies and onychodysplasia
8. Odonto-tricho-ungual-digital-palmar syndrome<sup>37</sup> – Salient clinical features include natal teeth, trichothiodystrophy, prominent interdigital folds, simian-like hands with transverse palmar creases and unguinal dystrophy. Hypoplasia of the first metacarpal and metatarsal bones and distal phalanges of the toes may also occur
9. Manitoba-oculo-tricho-anal syndrome<sup>38</sup> – It is a rare condition defined by eyelid colobomas, cryptophthalmos and anophthalmia/microphthalmia, triangular growths of hair extending from scalp to eyebrow, a bifid or broad nasal tip and gastrointestinal anomalies such as omphalocele and anal stenosis
10. Tricho-oculo-dermo-vertebral syndrome (Alves syndrome)<sup>39</sup> – It is characterized by dry sparse, brittle hair, dystrophic nails, plantar keratoderma, short stature, and cataract
11. Trichodental syndrome<sup>40</sup> – It is inherited in an autosomal dominant fashion and is characterized by the association of fine, dry and short hair with dental anomalies
12. Trichodysplasia-amelogenesis imperfecta<sup>41</sup> – The association of amelogenesis imperfecta and a microscopically typical hair dysplasia has been found in several members of a family in two generations
13. Oculo-tricho-dysplasia neutropenic syndrome<sup>42</sup> – It is a form of trichothiodystrophy characterized by hypoplastic fingernails, trichorrhexis, chronic neutropenia and mild psychomotor retardation
14. Trichomegaly-retina pigmentary degeneration-dwarfism syndrome<sup>43</sup> – It is characterized by growth retardation, alopecia, abnormally long eyelashes and retinitis pigmentosa and moderate intellectual deficit in the majority of cases.

### Diagnostic/procedural

1. Trichoesthesiometer<sup>44</sup> – An electric appliance to measure sensitiveness of scalp by means of hair.
2. Trichographism<sup>45</sup> – The development of “goose flesh” when stroking the skin; pilomotor skin sign.
3. Trichogram<sup>7</sup> – It is a simple technique to calculate the percentage of hair in telogen and anagen phases. It includes a forced pluck of 60–80 hair that includes the hair roots which are examined under the microscope.
4. Phototrichogram<sup>46</sup> – Phototrichogram (photographic trichogram) is a noninvasive technique that is simpler and more reproducible and sensitive than a trichogram. It allows the *in vivo* study of the hair growth cycle.
5. Trichoscopy<sup>47</sup> – Trichoscopy is the term coined for dermoscopic imaging of the scalp and hair.
6. Trichoscan<sup>46,48</sup> – It is a method that combines epiluminescence microscopy with automatic digital image analysis for the measurement of human and potentially animal hair, *in situ*.
7. Cross-sectional trichometry<sup>49</sup> – It is a useful tool to clinically assess changes in hair mass caused by thinning, shedding, breakage or growth in males and females with progressive alopecia or those receiving treatment for alopecia. It can measure all types of hair, from super fine to very coarse, so far as the hair is at least 2.5 cm (1 inch) in length.
8. Trichometric index<sup>49</sup> – Cohen introduced in his report the cross-section trichometer, a handheld device for measuring hair mass. This device “grabs” the bundle of hair from a 2 cm × 2 cm scalp area in a J-slot and measures the cross-sectional area of the hair bundle. It then displays the trichometric index which equals to bundle cross-sectional area in mm<sup>2</sup>/cm<sup>2</sup> of scalp surface multiplied by 100.
9. Trichophytic closure<sup>50</sup> – It is a technique used in hair restoration surgery to improve the donor scar outcome.

**Table 3: Compilation of miscellaneous terminologies (related to hair) containing the word “trich”**

Trich	Description
Hypertrichosis <sup>7,51</sup>	Excessive hair growth (except for the androgen-dependent hair patterns for which the term hirsutism is used)
Hypotrichosis <sup>7</sup>	Paucity of hair growth
Atrichia <sup>7</sup>	Absence of hair from the entire surface of skin
Trichomegaly <sup>52</sup>	Increase in length (12 mm or more), curling, pigmentation or thickness of eyelashes
Trichiasis <sup>53</sup>	Complication of trichomegaly; eyelash hair turn towards the eye, inducing corneal abrasions and conjunctivitis
Trichosiderin <sup>54</sup>	An iron-containing pigment found in human red hair
Trichohyaline <sup>55</sup>	Structural protein that confers mechanical strength to the hair follicle inner root sheath and to other toughened epithelial tissues, like hard palate and filiform ridges of the tongue
Trichology <sup>56</sup>	The branch of medicine that deals with the scientific study of the health of hair and scalp
Trichorrhea (obsolete term) <sup>57</sup>	The rapid loss of hair
Trichomadesis (obsolete term) <sup>58</sup>	The falling out of hair which may lead to alopecia
Trichopathy (obsolete term) <sup>59</sup>	Any disease of the hair

**Miscellaneous [Table 3]****“Trichs” not pertaining to hair**

1. Trichophyton<sup>60</sup> – It is a genus of fungi which causes tinea, including athlete foot, ringworm, jock itch.
2. Trichophytin test<sup>61</sup> – This detects past infection by *Trichophyton* species. Its value is limited.
3. Trichrome stains<sup>62</sup> – Trichrome stains can demonstrate various elements of connective tissue. Common examples are the van Gieson stain and the Masson trichrome stain.
4. Trichomoniasis<sup>63</sup> – It is parasitic infection caused by *Trichomonas vaginalis*.
5. Trichinosis<sup>63</sup> – It is an infection of the intestine and muscle with *Trichinella spiralis*.
6. Trichrome vitiligo<sup>64,65</sup> – The term trichrome vitiligo describes lesions that have a tan zone of varying width between normal and totally depigmented skin which exhibits an intermediate hue. It is a variant of active vitiligo.
7. Trichophytic granuloma<sup>66,67</sup> – It is a rare extension of trichophytic fungal infections beyond epidermis and its appendages. Its development is facilitated by small traumatic injuries such as leg shaving or severe excoriations caused by psychosis.
8. Trichloroacetic acid<sup>68</sup> – It has been the gold standard in chemical peeling for many decades.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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