



## ATULYAGOTREEYA VIVAHA: A SCIENTIFIC REVIEW AND CASE SERIES ON NON-CONSANGUINEOUS MARRIAGE

DEVIKA SRINIVASAN DIVAKARAN<sup>1\*</sup> RACHANA HV<sup>2</sup>

<sup>1\*</sup>Final Year PG Scholar, Professor, Department of Prasuti Tantra and Stree Roga, Sri Sri College of Ayurvedic Science and Research, Bengaluru

Corresponding Author Email: [devika9797@gmail.com](mailto:devika9797@gmail.com) Access this article online: <https://jahm.co.in>

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### ABSTRACT:

*Atulya Gotra Vivaha* (non-consanguineous marriages), emphasized in Ayurveda and supported by modern genetics, plays a crucial role in reducing the risk of congenital anomalies and genetic disorders. Ancient Ayurvedic texts, such as *Acharya Charaka's Atulyagotreeya Shareera Adhyaya*, advocate marrying outside one's *Gotra* to prevent the inheritance of faulty genes and ensure healthier progeny. Modern science also confirms that consanguineous marriages increase the risk of autosomal recessive disorders like mental retardation and congenital anomalies. Despite these insights, cultural norms, ignorance, and lack of awareness drive individuals, especially in less-educated communities, to practice consanguineous marriages, risking the life and health of future generations. This review highlights the need for awareness and education regarding the risks of such unions. Promoting *Atulya Gotra* marriages can help reduce the burden of genetic disorders and protect every child's life, which is invaluable to the well-being of society.

**Keywords:** *Atulyagotreeya Vivaha, Gotra, Consanguinity, Genetics*

## INTRODUCTION:

*Atulyagotreeya* (non-consanguinity) is a concept deeply ingrained in Vedic culture, particularly in relation to *Garbha* and *Gotra* system. *Atulyagotreeya Vivaha* (non-consanguineous marriage) advocates marriages between individuals from different *Gotras*, highlighting the essential role of genetic diversity in ensuring the health and well-being of future generations. The chapters dedicated to *Atulyagotreeya* and discussions by *Acharyas* underscore the significance of these concepts in promoting the overall health of offspring. As noted by *Chakrapanidutta* in reference to *Acharya Charaka*, “*Atulyagotrasya Iti Atulyagotrasya Pumsaha, Tulyagotranam Hi Maithuna Adharma Bhavati, Dharmashastreshu Nishiddhatvat*,” which translates to the notion that marrying within same *Gotra* is considered *Adharma* and contravenes the principles outlined in *Dharmashastras*.<sup>[1]</sup>

## MATERIALS AND METHODS:

This study involves a literature review with a short case series to explore the scientific and cultural perspectives on *Atulyagotreeya Vivaha* (non-consanguineous marriages). Sources for the literature review include *Bruhatrayees* along with their commentaries, *Manusmriti*, and other classical texts that provide insights into genetic and socio-cultural significance of non-consanguineous unions.

### Decoding the term ‘*Atulya Gota Vivaha*’:

***Atulya***- ‘*Tulya- Sādrśyayukta*.’<sup>[2]</sup>

‘*Atulya - Na Tulya Sadrśam Nañasamāsa*.’<sup>[3]</sup>

So ‘*Atulya*’ *Gotra Vivaha* is marrying from a *Gotra* that is different from one’s own.

***Gotra***- ‘*Apatyam Pautrapabhrtim Gotram*’ (*Panini: IV. 1. 162*)

Broadly refers to people who are descendants in an unbroken male line from a common male ancestor or patriline. The term *Gotra* is correlated to a cowshed protecting the lineage.

In Hindu mythology, the *Saptarishis*, or seven great sages, were created by Lord *Brahma* from his mind, hence known as *Manasaputras*, to spread *Dharma* and preserve wisdom. Each sage embodies unique divine knowledge, and their descendants form distinct *Gotras*, emphasizing moral and genetic purity within these ancestral lineages.

Historical view:

The term *Gotra* is mentioned in *Rig Veda* which loosely translates to herd of cows. In *Chandogya Upanishad*, *Gotra* is family or lineage kin. In *Agni Purana*, 24 *Gotras* are enumerated under *Varna Sankara*.

**Table No. 1: *Saptarishis* as per classical reference**

According to <b><i>Shatapatha Brahmana</i></b> & <b><i>Brihadaranyka</i></b> <b><i>Upanishad</i></b>	According to <b><i>Mahabharata</i></b>
<i>Atri</i>	<i>Atri</i>
<i>Vasishta</i>	<i>Vasishta</i>
<i>Kashyapa</i>	<i>Kashyapa</i>
<i>Gautama</i>	<i>Marichi</i>
<i>Bharadwaja</i>	<i>Pulaha</i>
<i>Vishwamithra</i>	<i>Pulastya</i>
<i>Jamadagni</i>	<i>Kratu</i>

Along with *Agastya Maharishi* who is a disciple of *Rishi Kashyapa*, there are 8 *Rishis* and they are called *Gotrakarin* meaning root of *Gotras*. All other *Brahmin Gotras* evolved from one of the above *Gotras* and the descendants of these *Rishis* started their own *Gotras* over time.

Many *Gotras* of Hindu religion are of totemic origin which is named after plants, animals, and natural objects. Eg: *Bagh* (tiger), *Murkuria* (peacock), *Kachhap* (tortoise), *Bharadwaja* (Lark), *Agastya* (Agasti bloom), *Kanada* (Owl), *Mandavya* (Frog). Names of trees, rice, crops, sandalwood etc. also serve as names of clans.

Spiritual *Gotra* is where *Shishya* (disciple) takes the *Gotra* of the *Guru* (spiritual teacher) through a process of initiation called *Diksha*. Astrological *Gotra* is based on one's *Nakshatra* (birth asterism). During ceremonies, the priest allocates *Kashyapa Gotra* to those who do not have a specific *Gotra*. The seven stars of the big dipper, a part of ursa major constellation, are identified with the names of *Saptarishis*.

**Vivaha:** *Vivaha* is one among the 16 *Samskaras*. In *Ashtanga Sangraha*, *Vridha Vagbhatta* has mentioned about '*Vivaha Yogya Kanya*' in which *Atulya Gotra* and *Atulya Abhijana* has been mentioned amongst other qualities.<sup>[4]</sup> There are different opinions regarding *Vivaha Yogya Kala* (Age at which one should get married):

**Table No. 2: Vivaha Yogya Kala**

Acc. to:	Male	Female
<i>Susruta Samhita</i> <i>Sha.10/53</i>	25 years	16 years

<i>Ashtanga Sangraha</i> <i>Sha.1/3</i>	21 years	12 years
<i>Ashtanga Hrudaya</i> <i>Sha.1/8</i>	20 years	16 years

*Manusmriti* states the 8 types of *Vivaha* in which *Brahma, Arsa, Daiva* and *Prajapatya* are regarded as *Prashasta Bheda* which is the accepted form whereas *Gandharva, Asura, Rakshasa, Paishacha* are not accepted termed as *Aprashasta*.<sup>[5]</sup>

#### Classical References of Atulya Gotra Vivaha:

*Acharya Charaka* mentions that when a woman completes her menstrual cycle, she should indulge in *Maithuna*(coitus) with a man of *Atulya Gotra*.<sup>[1]</sup>

*Gangadhara* quotes from *Manusmriti*- Girl should not be related to his mother by *Sapinda* (blood relatives) nor to his father by *Sagotra*. The parents of the boy and girl also should be of different *Gotra* before their *Vivaha* as well.<sup>[6]</sup>

*Vridha Vagbhatta* has opined that a man of 21 years old should marry a girl belonging to different *Gotra*, same community and without any prevalence of *Kula Sanchari Roga* (Hereditary diseases) like *Kushta, Paingalyadi* etc. within the family. *Indu* has clarified that *Gotra* refers to the *Vasishtadi Rishi Gotras* as mentioned in *Loka Shastra*.<sup>[4]</sup>

In *Susruta Samhita* and *Bhavaprakasha*, *Sagotra* is mentioned under the list of women who are contraindicated for *Sambhoga* (coitus).<sup>[7],[8]</sup>

A woman from the *Samana* (same) *Gotra* should be avoided, only then an intelligent and healthy son is born.<sup>[9]</sup>

Acharya Kashyapa describes *Asamangotriaadhyaya* in *Shareera Sthana*, but details regarding the topic is missing and only *Masanumasika Vriddhikrama* is available in this chapter.<sup>[10]</sup>

There is no harm in *Sagotra* marriage if the individuals are not related for 6 generations on both maternal & paternal sides. i.e., *Sapindata* or familial lineage ends after seven generations.<sup>[11]</sup>

In *Dharmasindhu*, *Chandrayana Tapa* (a fasting ritual), *Gyana* (Knowledge), *Prayashchitta* (Atonement) are mentioned for the negative implications of marriage within same *Gotra*.<sup>[12]</sup> *Yagnyavalkyasmriti* also explains about the importance of *Gotras* in *Vivaha*.<sup>[13]</sup>

**Consanguinity:**

The word consanguineous is originated from Latin words, ‘Con’ which means ‘same’ and ‘Sanguinous’ which means ‘Blood Relations.’ As per clinical genetics, A consanguineous marriage is defined as a union between two individuals who are related as second cousins or closer, with the inbreeding coefficient (F) equal or higher than 0.0156 where (F) represents a measure of the proportion of loci at which the offspring of a consanguineous union is expected to inherit identical gene copies from both parents.<sup>[14]</sup>

**Degrees of consanguinity<sup>[15]:</sup>**

**1° consanguinity-** First degree relatives are brothers and sisters, nonidentical (dizygotic or fraternal) twins, parents, and children. Autosomal recessive condition is maximal. They have 50% of their genes in common and the risk of abnormality in offspring is 50%. This type of consanguinity was common in 18-19<sup>th</sup>

Egyptian dynasties, Zoroastrian Iran, Inca empire, and Hawaiian ruling classes but in today’s era, it is mostly considered a taboo.

**2° consanguinity-** Second degree relatives are uncle and aunts, nephews and nieces, grandparents, half-brother, and half-sisters. They share 25% genetic material in common with 5-10% risk of abnormality in offspring.

**3° consanguinity-** Third degree relatives are first cousins, half uncles and aunts, half nephews and nieces. They have 12% genetic material in common and risk of abnormality in offspring is 3-5%

**4° consanguinity-** Fourth degree relatives include second cousins, great grandparents, great uncle, great nephews, and nieces. There is only a minimal risk of inheriting autosomal recessive diseases as there is just 6% genetic material in common.

**Recent trends in consanguinity:**

Consanguineous marriages were historically favoured for preserving family assets and simplifying arrangements. However, their prevalence is declining due to higher education levels among women, urbanization, and increased awareness of health risks. Reduced fertility rates and improved economic status allow families to seek diverse partners, while concerns over genetic disorders further discourage these unions, leading to a gradual shift in societal norms.

Prevalence of Consanguinity<sup>[16]:</sup>

**Table No. 3: Global Prevalence of Consanguinity**

North Africa, West Asia, and South India	20–50%
Qatar	54%

Saudi Arabia	29-56%
Libya	37.6%
Pakistan	60%
European countries, South America, Australia, North America	1-1.5%

As per a recent National Family Health Survey (NFHS) in 2023, the overall prevalence of Consanguineous marriages in India is found to be 11%. Tamil Nadu (28%), Karnataka (27%) and Andhra Pradesh (26%) have the highest percentage closely followed by Puducherry (19%), Telangana (18%), Ladakh (16%), Maharashtra (15%) and Odisha (13%).

#### Impact of Consanguinity

- **Increased Risk of Autosomal Recessive Disorders:** There is a greater chance that both parents carry the same deleterious recessive allele from a common ancestor, increasing the likelihood of offspring inheriting two copies and manifesting disorders like cystic fibrosis, sickle cell anaemia, and Tay-Sachs disease.<sup>[17]</sup>
- **Increased Prevalence of Rare Genetic Disorders:** Consanguineous marriages can lead to higher incidences of rare genetic disorders in isolated populations due to the founder effect and genetic drift, often resulting in undiagnosed or misdiagnosed conditions.
- **Increased Prevalence of Congenital Anomalies:** These unions lead to various congenital anomalies, including neural tube

defects, cardiovascular malformations, and limb deformities.<sup>[18]</sup>

- **Increased Risk of Multifactorial Disorders:** Consanguinity raises the risk of polygenic diseases such as diabetes, cardiac conditions <sup>[19]</sup>, Alzheimer's <sup>[20]</sup> and certain cancers due to the presence of multiple risk alleles in families.
- **Epigenetic Factors:** Environmental and lifestyle factors interacting with genetic predispositions can amplify the prevalence of multifactorial disorders.
- **Increased Homozygosity and Genetic Diversity Reduction:** Consanguinity raises the likelihood of homozygosity at genetic loci, increasing recessive disorder risks and potentially reducing overall population fitness due to diminished genetic diversity.

#### Case series:

The following case series provides a detailed discussion of five patients who presented at the OPD of Sri Sri College of Ayurvedic Science and Research, highlighting their clinical presentations, diagnosis, and outcomes.

**Case 1:** A 24-year-old female with [O.P.D No. 207579/ I.P.D No. 48851] with history of a second-degree consanguineous marriage presented with her first pregnancy (G1 P0 L0 A0 D0) at 21 weeks and 3 days of gestation. An anomaly scan at 21 weeks revealed several significant foetal abnormalities, including a Multicystic dysplastic left kidney, a choroid plexus cyst, a single umbilical artery, and a circumvallate placenta. Due to the severity of these anomalies, a medical termination

of pregnancy (MTP) was performed in the second trimester.

**Case 2:** A 16-year-old female [O.P.D No. 260230/I.P.D No. 56219] presented to the OPD with complaints of secondary amenorrhea for the past 1.5 years. She attained menarche at 12 years of age with history of irregular menstrual cycles. Ultrasound examination revealed a hypoplastic uterus measuring 4.3 x 2.1 x 3.9 cm and streak ovaries. Her family history is notable for parents who have a second-degree consanguineous marriage. Karyotyping results were normal.

**Case 3:** A 36-year-old female [O.P.D No. 270190/I.P.D No.] 118 with a history of repeated abortions and an eight-year marital life with a third-degree consanguineous partner presented for evaluation. Her obstetric history includes four pregnancies (P0 L0 A4 D0), all resulting in abortion. The first abortion occurred in 2018 as a missed abortion at 6 weeks. The second, following intrauterine insemination (IUI), was a missed abortion at 8 weeks in 2019. In 2022, she experienced a spontaneous abortion, and the most recent abortion in 2023 occurred after in vitro fertilization (IVF) failed at 7 weeks. Comprehensive infertility investigations have been performed, revealing no abnormalities.

**Case 4:** A 28-year-old female [O.P.D No. 236845/I.P.D No. 305] with a history of a second-degree consanguineous marriage of two years presented with her first pregnancy (G1 P0 L0 A0 D0). An anomaly scan at 21 weeks revealed the foetus had anencephaly. Consequently, a medical termination of pregnancy (MTP) was performed at 21 weeks and 5 days of gestation.

**Case 5:** A 24-year-old female [O.P.D No. 261567/I.P.D No. 56527] with a history of a second-degree consanguineous marriage presented with an obstetric history of two pregnancies, both resulting in neonatal deaths (P2 L0 A2 D2). The first neonatal death was due to hypoglycaemic encephalopathy, and the second was a dysmorphic baby born in 2022. She also experienced two early miscarriages: one at 8 weeks in 2024 and another at 7 weeks in 2021, both with no fetal cardiac activity detected. Karyotyping results were normal. Genetic carrier screening revealed that both partners are carriers of the GRIP1 gene mutation associated with Fraser Syndrome 3, an autosomal recessive disorder.

All the above cases involve consanguineous marriages, which is a significant common factor. Consanguinity increases the risk of autosomal recessive genetic disorders, congenital malformations, and other complications due to the higher probability of inheriting identical alleles from a common ancestor. All women experienced significant reproductive challenges, including repeated abortions, early miscarriages, and fetal anomalies. This indicates a possible genetic basis or underlying health conditions exacerbated by consanguinity. Despite normal karyotyping results, genetic carrier screening revealed specific mutations, underscoring the need for comprehensive genetic testing beyond karyotyping in such cases. The common thread among these cases is the influence of consanguineous marriages on reproductive outcomes. The high incidence of genetic and congenital issues highlights the importance of genetic counselling and thorough

prenatal screening and counselling in managing and preventing adverse outcomes. Early detection and intervention, along with informed reproductive choices, could potentially mitigate some of the risks associated with consanguineous unions.

## DISCUSSION:

### Ayurvedic view of Genetic disorders

- **Sahaja Vyadhi:** It is told under the context of *Arsha Chikitsa* where it is caused due to the vitiation of the *Beeja Dosh*. The reasons for this could be *Matru Pitru Upachara* and *Purvakrita Karma*. *Sahaja*

*Vyadhi* are abnormalities present from birth.<sup>[21]</sup>

- **Kulaja Vyadhi:** It is told under the context of *Prameha Chikitsa*. It is said to be *Asadhya* as it because of *Beeja Dosh*.<sup>[22]</sup>
- **Aadibalapravruttha Vyadhi:** It is one among the 7 types of *Vyadhi* which occurs due to *Shukra Shonita Dosh*. *Acharya Susruta* has given the example of diseases like *Kushta* and *Arshas*.<sup>[23]</sup>
- **Beeja, Beeja Bhaga, Beeja Bhaga Avayava Dushti:** Abnormalities in these components can cause the following disorders:<sup>[24]</sup>

**Table No. 4: Impact of Beeja Dushti in Stree and Purusha**

<b>Beeja Dosh in</b>	<b>Vikruti in Stree</b>	<b>Vikruti in Purusha</b>
<i>Beeja Bhaga</i>	<i>Vandhya</i>	<i>Vandhya</i>
<i>Beeja Bhaga Avayava</i>	<i>Putipraja</i>	<i>Putipraja</i>
<i>Beeja Bhaga Avayava + Avayava</i> responsible for Male/Female characteristics	<i>Varta</i>	<i>Trunaputrika</i>

- **Shad Dhatvatmaka Bhavas:** Out of the 6 *Shad Bhavas*, *Matruja* and *Pitruja Bhavas* contribute significantly to *Garbha Utpatti*.<sup>[25]</sup>

### Can Gotra be correlated to Gotra System?

Gotra system follows tracing of the patrilineal ancestry as Y chromosome is always a male lineage (father-son-grandson) as a son receives it from father. A mother will pass either her mother's X chromosome to her Children or her father's X chromosome to her children or a combination of both because of both her X Chromosomes (XX)

getting mixed (called as Crossover). A son always gets his father's Y chromosome, almost intact without any changes as there is no other corresponding Y chromosome in his cells to do any mixing as his combination is XY.

There is a concept of *Gotrantara* where the wife acquires the husband's *Gotra* in the approved forms of marriage. But when her children are to be married her natal *Gotra* and patrilineage must be considered for purposes of ascertaining forbidden degrees, as if the change had never taken place. This is made

necessary by the rule to avoid a *Sapinda* on the father's and mother's side as it is by the rule, supported by a minority of *Dharmashastrins*, to avoid a *Sagotra* of the mother. The '4-Gotra Rule' says the prevailing rule which prohibits marriage between a couple whose clans or the natal clans of whose mothers, fathers' mothers, or mothers' mothers include any identical pair.<sup>[26]</sup>

#### **Addressing the Concern of Consanguinity:**

- **Genetic Counselling:** This process involves gathering comprehensive family medical histories to assess hereditary conditions and genetic risks associated with consanguinity. Couples receive education on genetics and inheritance patterns, emotional support to manage psychological stress, and guidance for informed decision-making regarding genetic testing, pregnancy, and family planning. If a genetic condition is identified, referrals to specialists need to be provided.
- **Pre-Marital Genetic Testing:** Techniques include DNA sequencing for specific mutations, panel testing for multiple genes, and large-scale testing like next-generation sequencing (NGS). Exome sequencing analyses medically relevant genes, while genome sequencing provides a complete DNA overview. Other methods such as karyotyping and fluorescence in situ hybridization (FISH) detect chromosomal abnormalities, while chromosomal microarrays identify duplications and deletions.

- **Pre-Natal Genetic Testing:** Early pregnancy screening includes ultrasound to detect neural tube defects and congenital anomalies, along with haematology tests to assess pregnancy health. Cell-free DNA testing analyzes fetal DNA in maternal serum. Amniocentesis and chorionic villus sampling (CVS) allow for precise genetic diagnoses, while pre-implantation genetic diagnosis (PGD) analyzes embryos before implantation during IVF.

#### **Role of Ayurveda in Prevention**

Ayurveda plays a crucial role in prevention by incorporating principles such as *Garbha Samskara*, *Garbhadhana Poorva Samskara* with *Pumsavana* and *Garbhini Paricharya*, which prepare parents for conception and a healthy pregnancy. *Daivavyapashraya* and *Satvavajaya Chikitsa* addresses emotional well-being. Together, these approaches enhance reproductive health and minimize the risk of hereditary disorders, ensuring the well-being of the progeny.

#### **Role of Shodhana**

*Acharya Kashyapa* specially quotes that only in a *Garbhashaya* after *Shodhana*, *Adushta* and *Prakruta Beeja* will be formed. After *Shodhana*, the *Pathya* will attain complete *Veerya*. *Virechana* is said to have direct action on the *Beeja Karmukata*.<sup>[27]</sup>

#### **Understanding Epigenetics for Preventing Hereditary Diseases**

Epigenetics is the study of changes in gene expression or cellular phenotype. These changes, such as DNA methylation, histone modification, and non-coding RNA, influence how genes are



expressed. For example, turning off a gene associated with a hereditary disorder can prevent its expression, reducing the likelihood of developing the condition. Similarly, activating protective genes can enhance the body's ability to reduce the effects of harmful genetic mutations, offering a potential pathway for preventing hereditary diseases.

### **Patient Education and Awareness**

Patient education and awareness are essential for addressing the genetic implications of consanguinity, as it can increase the risk of hereditary conditions such as cystic fibrosis, thalassemia, and sickle cell disease. By highlighting these conditions and explaining their inheritance patterns, patients can better understand the potential health risks. Visual aids, such as charts and diagrams, can further enhance comprehension of how genetic traits are passed within families. Additionally, raising awareness about available genetic screening methods and the importance of genetic counselling services empowers patients to make informed decisions. Ensuring culturally sensitive communication is crucial, and collaborating with community leaders can facilitate respectful dialogue, allowing for the effective delivery of this important information while honouring cultural beliefs and practices.

### **CONCLUSION:**

The concept of *Atulya Gotra Vivaha* emphasizes the importance of genetic diversity in maintaining family health. The ancient guideline of avoiding marriage within the same *gotra* aligns with modern genetic principles, aimed at reducing the risk of hereditary disorders. Ayurveda plays a vital role in

understanding the timeless concepts taught by our *Acharyas*, offering preventive measures like *Shodhana* to mitigate genetic risks. By bridging the gap between traditional customs and modern science, *Ayurveda* promotes health and helps prevent hereditary disorders. However, in today's era, the *Gotra* system is gradually fading, resulting in a loss of awareness about our ancestral lineage. To counter this, it is essential to foster awareness of the benefits of non-consanguineous marriages, empowering individuals to make informed decisions about their marital choices while promoting genetic diversification. Efforts to pass down knowledge to future generations are crucial for preserving our understanding of hereditary risks. By reviewing existing literature alongside specific case studies, we can gain a comprehensive understanding of the implications of consanguinity and emphasize the importance of accurate and timely diagnosis for affected individuals and families. This approach will ultimately contribute to better health outcomes and a more informed society.

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