

# A critical review on etiology of Vandhytwa through Scientific approach

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## Abstract:

Life style of present day's women is very stressful, unhealthy and unhygienic due to unawareness, hectic and fast running schedule. So infertility is emerging as one of the major disorder affecting the social and psychological aspect of the life of the masses. Infertility is a failure of conceiving within 1 year of regular unprotected coitus. According to the Indian Society of Assisted Reproduction, infertility currently affects about 10 to 14 percent of the Indian population, with higher rates in urban areas where one out of six couples is impacted. Nearly 27.5 million couples actively trying to conceive suffer from infertility in India. According to *sushruta*, woman, in whom *Artava* has been destroyed, is termed as *Vandhya*. According to *Acharya Sushruta* four main factors required for the proper conception are *Ritu* (Ovulatory period), *Kshetra* (endometrium), *Ambu* (Hormones) and *Beej* (Ova and Sperm). As per Ayurveda, *Nidan-parivarjana* is the first line of treatment thus before treating any disorder we should have knowledge about causative factors and pathology of that condition. *Vata* is the prime causative factor of *Vandhyatwa*. In the given paper, there is elaboration of scientific approach towards the causes of vandhyatwa on the basis of the various causative factors from different ancient texts.

**Keywords:** Infertility, *Vandhytwa*, etiology, conception

## Introduction:

God has blessed women with the ultimate gift of being a mother but if she could not be a mother, it is most disappointing. Life style of present day's women is very stressful, unhealthy and unhygienic due to unawareness, hectic and fast running schedule so infertility is emerging as a major disorder affecting the social and psychological aspect of the life of the masses. The word *Vandhya* is derived from the root "*Vandh*" with "*Yak*" Suffix, which means barren, unproductive, fruitless and useless so the woman in whom there is hindrance of any kind to the normal process of conception is called *Vandhya*. According to *sushruta*, woman, in whom *Artava* has been destroyed, is termed as *Vandhya*<sup>1</sup>.

## Classification:

*Charakasamhita*: various references are togetherly classified in three types

- 1) ***Vandhya***: refers to absolute inability to conceive due to serious innate problems like *beejopaghata* (absolute congenital chromosomal or mullerian agenesis abnormalities).<sup>2</sup>
- 2) ***Apraja***: refer to infertility in which woman conceives after treatment (primary infertility) or a woman with unsuccessful pregnancies even after obtaining conception<sup>3</sup>.

3) **Sapraja**: refer to a condition in which a woman in her active reproductive age does not conceive with previous history of bearing successful pregnancies<sup>4</sup>.

#### **HARITA SAMHITA<sup>5</sup>:**

Acharya Harita has described six types of *Vandhya* with special clinical features.

- (1) **Kakavandhya**: unable to conceive after one child.
- (2) **Anapatya**: Primary sterility where the lady never conceives.
- (3) **Garbhasravi**: characterized by unsuccessful pregnancies due to repeated abortions.
- (4) **Mritavatsa**: characterized by unsuccessful pregnancies due to repeated intrauterine death, still births and perinatal deaths.
- (5) **Balakshaya**: Infertility due to loss of *Bala* (strength) or *dhatukshaya*.
- (6) **Unexplained**: If the coitus is done with a girl before her menarche it results in constriction of uterus and *Bhaga* and this woman does not conceive or conceives quite late with great difficulty.

#### **Etiology of Vandhyatwa:**

*Vandhyatwa* is a multifactorial disease. They are classified into two types -

##### **[A] Abnormalities in essential factors:**

To understand the pathology of conception, it is very fundamental to go through the physiology of conception i.e. the factor essential for conception.

##### **According to Acharya charaka<sup>6</sup>:**

**Matruja and Pitruja**: *Shonita* (*Stribeeja*) and *Shukra* (*Pumbeeja*) should be normal.

**Aatmaja and Satvaja**: *Aatma* encircled with *satva* descends in the fertilized egg and forms *garbha*<sup>7</sup>. Formation of *garbha* is not possible without *aatma* and *satva*.

**Satmyaja and Rasaja**: The normalcy of *shonita* and *shukra* greatly depend upon the use of *Satmya Aahara* and *Vihara*. The nourishment of mother and embryo depend upon the *Rasa*.

**So, any abnormality of Garbhakarabhavas i. e shadbhawas will cause failure to conceive.**

##### **According to Acharya sushruta:**

According to Acharya Sushruta four main factors required for the proper conception are<sup>8</sup>

**Rutu**: Acharya Dalhana explained *Rutu* as *Rajaha Samayaha* i.e. ovulation period. When seeds are sown during *Rutu* (season), they are likely to bear fruit. So, *Rutu* is the most fertile period in which *Garbhashya* or *Yonimukha* opens for entry of sperm and facilitate conception. According to *bhavprakash*, *Rutukala* is the appropriate period for *Beejotsarga* and *Garbhadhana*. It is of 12 days<sup>9</sup> or 16 days<sup>10</sup> or if *Yoni*, *Garbhasaya* and *Artava* are healthy, it may be of whole month<sup>11</sup>, Sometimes *Rutukala* may come up without menstruation. Acharya Dalhana has explained that in twelve day duration, the first three days and last one day constriction of *Yoni* out of sixteen days duration are not counted. Since the seed (sperm) deposited during this period are likely to bear fruit (conception), hence it is termed as *Rutukala*.

Acharya Kashyapa has been mentioned its duration as 12 days for *Brahmanis*, 11 days for *Kshatriya*, 10 days for *Vaishya* and 9 days for *Kshudra*<sup>12</sup>. Acharya Bhawamishra has been mentioned its duration as 12 days for *Brahmanis*,

10 days for *Kshatriya*, 8 days for *Vaishya* and 6 days for *Kshudra*<sup>13</sup>.

**Kshetra:** *Acharya Dalhana* explained *Kshetra* as *Garbhasaya*. *Kshetra* is also taken as female reproductive system. Vagina should be healthy. Cervix and cervical mucus must be penetrable to pass spermatozoa. The fallopian duct must be patent and sufficient ciliary movement should be present. The uterus must be capable to support implantation and foetal growth throughout pregnancy.

**Ambu:** *Acharya Dalhana* explained *Ambu* as *Aharapakotpanna rasa dhatu*. Proper nourishment of genital organs by *Rasa* and hormone levels must be adequate. According to *Acharya Vagbhata*<sup>14</sup> as lotus flower closes after sunset, similarly after *rutukala* the yoni of woman gets constricted and does not accept *shukra*. The sun can be correlated with the ovary and the sun rays with the ovarian hormones and lotus flower with cervix. So at the end of *Rutukala*, level of ovarian hormone-estrogen decreases and cervical part of uterus get constricted and does not accept *shukra* or permit the entry of *beeja* (Sperm).

**Beeja:** *Acharya Dalhana* explained *Beeja* as *Artava & Shukra*. Ovum must be normal and there should be presence of ovulation. The male must produce an adequate number of motile and morphologically normal spermatozoa. Scientific explanation of physiology of *beeja nirmana* is given by *Vishvamitra* in *Sushruta Sutra* 14/14, *Chakrapani* commentary. He explained that *rakta* (the form achieved by the *rasa* after entering into the concerned *strotas*) enters into the minute channels (*Sukshmaresha pratikashah bijaraktavaha sirah*) attaining the particular nuclear form which has the capacity to form *beeja*.

In the same context *Acharya Sushruta* described that *rasa* which attains *raktatva* through innumerable *dhamanis* gets *upachita* in the form of *artava*.

*Acharya Kashyapa* mentioned that *garbha* forming entity is exposed to the *rajovaha shiras* where the *rajaha pravasarjana* occurs. Then it takes the form of *pushpa* & its *pravartana* occurs every month<sup>15</sup>. *Pravartana* is governed by *apana vayu* as mentioned by *Acharyas* in the *prakrita karma* of *apanavata*<sup>16</sup>. Similarly, *parisarpana* mentioned at the time of coitus requires presence of *agni*, which can correlate to *pitta*<sup>17</sup>.

*Kapha* is *Prithvi* and *Jala Mahabhuta Pradhan* and these *Mahabhutas* play important role in *Nirmana Prakriya*. *Acharya Charaka* has mentioned *Upachyaas* the *Karma* of *Kapha*<sup>18</sup> and *Acharya Sushruta* states *Kapha Karma* as *purantarpanabalasthairyakrit*<sup>19</sup>. All these virtues help in formation of *Beeja*. Moreover *Kapha* and *Rasa* having *Ashrayashrayi Bhava*, it plays an important role in the formation of its *Updhatu artava*.

**So abnormality in any one of these essential factors can cause Vandhyatwa.**

*Acharya Vagbhata* has emphasized that besides healthy *Garbhashaya*, *Marga*, *Rakta*, *Shukra*, properly functioning *Vayu* and normal psychological status are also essential<sup>20</sup>.

## [B] CAUSATIVE FACTORS:

*Yoni* never gets spoilt without *Vata*, *Vandhyatwa* has also been described in eighty types of *Vatikaroga*<sup>21</sup>. So, *Vata* is the prime causative factor of *Vandhyatwa*.

*Acharya Charaka* has clearly described the *Nidanas* of *Vandhyatwa*<sup>22</sup> which are almost similar to causes of infertility according to modern science.

## 1. YONI PRADOSHA:

The word "Yoni" refers to entire female reproductive system, thus, under this heading congenital or acquired diseases of anatomic components of reproductive system i.e. vagina, cervix, uterus, endometrium and fallopian tubes can be included. It can includes;

- *Yonivyapad*: All twenty *Yonivyapad*, if not treated properly, the woman is unable to conceive.
- Injury to *Artavavaha Strotas*: *Acharya Sushruta* has included *Vandhyatwa* under the clinical features of injury to *Artavavaha Strotas* along with other symptoms i.e. dyspareunia and amenorrhoea.
- 3) *Yoniarsh -Yoniarsha* in *yonis* cause infertility by destroying the *Artava*.
- *Garbhakoshabhang*<sup>23</sup>: Word "*Bhanga*" considered as prolapse of uterus or its retro-displacement, which is the one of the cause of infertility.
- *Bhagasankocha*<sup>24</sup>: During coitus with a girl before her menarche, deep lacerations or tear of vulva and vagina may take place. Healed scars of these ulcers may produce constriction of vagina, thus, hamper proper penetration of penis during coitus resulting into incomplete coitus, a cause of infertility.
- *Sphalita Mutratwa*: *Sphalita mutratwa* in girls is seen in strictures, partial obstruction or spasm of urethra, for which the most common cause is gonorrhoeal urethritis, because gonococci causes inflammation of reproductive system along with urinary system. Gonorrhoeal salpingitis is very common cause of infertility.
- *Utkshiya Yoni*: Upward displacement of cervix in cases of retroversion of uterus is the one cause of infertility.
- *Aticharana yoni vyapad*: *Acharya Sushruta* says that this disease is caused due to excessive coitus. The woman does not achieve conception. *Charaka* and *Vagbhata* describe it to be *Vataja*, while *Sushruta* due to *Kapha*. In initial stage due to intense sexual desire, woman may feel vaginal itching and due to repeated coitus may have excessive mucoid unctuous secretion from cervical and endometrial glands, which are clinical features of *Kapha* as explained by *Sushruta*.
- *Vamini yonivyapad*: *Acharya Charaka* says that in this condition *shukra* is expelled with or without pain within 6 or 7 days of its entry into the uterus. This condition can be found in obstruction of cervix or fallopian tubes in which sperm comes outside without fertilization. While as per *Acharya Sushruta* *yonis* excretes *beeja* admixed with *raja* and *vata*<sup>25</sup> which can be compared with defect in implantation. Both the conditions are causes of infertility.
- *Putraghni yonivyapad*: The aggravated *Vata* due to predominance of *Ruksha guna* and *dushta shonita*, repeatedly destroy the foetus.
- *Shandhi yonivyapad*: Due to abnormalities of *beeja* the *Ashaya* (uterus) of the female fetus is influenced or afflicted with *Vayu*. The born child, in later had absence or very slight development of breasts, dislikes coitus and absence of menstruation.

2) **MANSIKA ABHITAPA**: Normal psychology of the couple is very important for achievement of pregnancy. Happiness of heart<sup>26</sup>, due to *Bhaya*, Distraught mind (*Vimana*), *Shoka*, *Krodha* etc., *Vata* will be vitiated and it is also said that *Vishada* further aggravates existing pathogenesis. *Saumnasya* is said to be important factor to achieve pregnancy.

3) **SHUKRA DOSHA**: All eight types of *Shukra dusthi* are incapable of producing progeny. Quantitative and qualitative abnormalities of sperms along with spermatic fluid cause infertility. *Pitruja Bhawas* described under six factors are carried to the embryo through sperms.

4) **ARTAVA DOSHA**: The word *Artava* refers to ovum, menstrual blood and ovarian hormones. *Nashtartava* is one of main cause of *Vandhyatwa*. *Artava* vitiated by different *Doshas* i.e. *Ashtartava dushti* produces infertility due to destruction of its *Beeja* of the ovum.

5) **AHARA DOSHA**: Dietetic abnormalities cause infertility in three ways:

- By producing loss of *Dhatus* and that of *Dhatvagni*, thus they influence hormones.
- By vitiating *Doshas* which cause various gynecological disorders, leading to infertility.
- By hampering nourishment of fertilized egg or implantation of zygote.

6) **VIHARA DOSHA**: Abnormal mode of life and *Vegavidharana*<sup>27</sup> (suppression of natural urges aggravate) *Doshas*, which produce various gynecological abnormalities. Coitus with woman in *Nyubja* or *Parshvaavastha*<sup>28</sup>, discharge of semen on *Samirana Nadi*<sup>29</sup> or outside the vagina comes under defective practice. In all these conditions probably semen is not properly deposited inside the vaginal canal. Thus sperm fail to enter uterus causing infertility.

Abnormalities of mode of life also cause infertility in two ways-

1. By vitiating *Doshas*, thus causing gynecological disorder
2. By preventing proper entry of sperms due to faulty deposition of seminal ejaculation.

7) **AKALA YOGA**: The word “*Kala*” considered as period of age and *Rutukala* both. In adolescent girls and old ladies<sup>30</sup> due to premenarche and menopausal stage respectively and before or after *Rutukala* due to absence and destruction of ovum respectively, conception does not take place.

8) **BALA KSHAYA**: *Bala* refers to physical strength and capacity to become pregnant. *Bala* depends upon *dhatus*, So probably loss of *Bala* due to *Dhatukshaya* as a complication of diseases, premature aging and unknown cause refers to infertility.

9) **ATMA DOSHA**: It includes infertility due to influence of misdeeds done by the couple in their previous life as well as abnormality of *Atma* descending in this pregnancy. Misdeeds of previous life refer to idiopathic causes. *Atma* descending in fertilized egg is encircled by *Satva*, both these *Atma* and *Satva* are included under *Shadbhawas* of embryo, conception is the result of union of *Shukra*, *Shonita* and *Atma*, naturally its abnormality may cause infertility.

10) **JATAHARINIS**: *Jataharinis* destroys *Bijaripaartava*, destroys *Vapu* (body), destroys the *Garbha* (fetuses), destroys the *Jata* (born children), destroys *Jayamana* (being born) or *Janishyamana* (to be born). *Acharya Kashyapa* has also mentioned *jataharinis* characterized with repeated expulsions of foetuses of different gestational periods i.e. *Andaghni*, *Durdhara*, *Kalaratri*, *Nakini*, *Vashya* etc.<sup>31</sup>



**11) Daivaprakopa:** This refers to idiopathic cause of infertility

**12) Beejadushti:** When the gene concerned with uterus is damaged in ovum, the progeny becomes sterile.

**13) Samshodhana vyapad**<sup>32</sup> If excessive medicines for *Vamana and Virechana* are given to a person of *Mridukoshtha* even after proper *Snehana and Swedana*, then due to Secretion of *Jeevrakta*, the *Vayu* gets vitiated and causes destruction of *beeja* (Sperm and Ovum) and *pushpa* (Menstruation).

According to modern science infertility<sup>33</sup> is caused by vaginal factor, Cervical factor s(5%), Uterine factors(10%), Tubal factors(25 to 30%), Ovarian factors (30 to 40%), Peritoneal factors: (5%) and Coital errors<sup>34</sup>.

## CONCLUSION:

The whole world is turning towards scientific approach. This being the age of reason everybody wants to measure the things on scientific parameters. In *Ayurveda*, it becomes necessary to study, understand and prove them particularly in light of modern scientific parameters in the present era. As per *Ayurveda*, *Nidan-parivarjana* is the first line of treatment thus before treating any disorder we should have knowledge about causative factors and pathology of that condition From the above article, the scientific approach towards the etiological concept of Infertility in perspective of *Ayurveda* and its relevance as per modern science.

<sup>1</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012, uttarstana 38

<sup>2</sup>Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi,2014, Sha. 4/30; 877

<sup>3</sup>Agnivesha, Charaka, Dridhbala, CharakaSamhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi,2014, Ch. Chi. 30/16; 842

<sup>4</sup>Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi, 2014, Ch. Sha. 2/7; 838

<sup>5</sup>Harita Samhita, Trutiya Sthana Hariharprasad Tripathi, Chaukambha, Krishnadas Academy, Varanasi, Edition 2th 2009, 48/2-6; 448

<sup>6</sup>Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi 2014, Ch. Sha

<sup>7</sup> Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi 2014, Ch. Sha.3/3,851

<sup>8</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012,

<sup>9</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012, Sha. 3/5; 26

<sup>10</sup>Bhava Prakasha (part 1&2) Bhavamishra with Vidhyotini Hindi commentary by Shri Brahma Shankar Mishra, 9<sup>th</sup> edition 1999, purvakhand garbhaprakarana 3/2; 20

<sup>11</sup> A. S. Sha. 1/40; 16

<sup>12</sup>Kashyapa Samhita, Pt. Hemraja Sharma, Vidyotini Hindi commentary, Chaukhamba Sanskrit Sansthan, Varanasi Reprint 2013, sharira sthan jatisutriyadhyaya/5; 80

<sup>13</sup>BhavaPrakasha (part 1&2) Bhavamishra with Vidhyotini Hindi commentary by Shri Brahma Shankar Mishra, 9<sup>th</sup> edition 1999,Purvakhanda 3/2; 20

<sup>14</sup>Ashtanga Hridaya commentary by Kaviraja Atridev Gupta, Chaukhambha Prakashana, varanasi, Reprint 2016, Sha. 1/ 21; 232

<sup>15</sup>Kashyapa Samhita, Pt. Hemraja Sharma, Vidyotini Hindi commentary, Chaukhamba Sanskrit Sansthan, varanasi Reprint 2013, Ka. Khil. 9/17; 287

<sup>16</sup>Agnivesha, Charaka, Dridhbala, CharakaSamhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi, 2014, Ch. Chi. 28/11; 778

<sup>17</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012, Su. Sha. 2/36,

<sup>18</sup>Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi,2014, Ch. Su. 12/12, 250

<sup>19</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012, Su. Su. 15/6, 74

<sup>20</sup>Ashtanga Hridaya commentary by Kaviraja Atridev Gupta, Chaukhambha Prakashana, Varanasi, Reprint 2016, Sha. 1/ 8; 230

<sup>21</sup>Kashyapa Samhita, Pt. Hemraja Sharma, Vidyotini Hindi commentary, Chaukhamba Sanskrit Sansthan, Varanasi Reprint 2013,Ka.Su. 27/29; 42

<sup>22</sup>Agnivesha, Charaka, Dridhbala, CharakaSamhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 ChaukhambaBharti Academy, Varanasi,2014

<sup>23</sup>Harita Samhita, Trutiya Sthana Harihar prasad Tripathi, Chaukambha, Krishnadas Academy, Varanasi, Edition 2th 2009, 48/1-2;448

<sup>24</sup>Harita Samhita, Trutiya Sthana Hariharprasad Tripathi, Chaukambha, Krishnadas Academy, Varanasi, Edition 2th 2009, 48/5;448

<sup>25</sup>Sushruta Samhita By Ambika Dutta Shastri Part 1<sup>st</sup> & 2<sup>nd</sup>, Chaukhambha Sanskrit Sansthan, Varanasi, reprint edition 2012, Su. U. 38/12; 205

<sup>26</sup>Ashtanga Hridaya commentary by Kaviraja Atridev Gupta, Chaukhambha Prakashana, Varanasi, Reprint 2016, Sha.1/8; 230

<sup>27</sup> Bhela Samhita with Hindi translation edited by Abhay katyayan, published by Chaukhambha Surbharati Prakashana, Varanasi, 1<sup>st</sup> edition, 2009, Bh. Sha. 3/4 ; 205

<sup>28</sup>Agnivesha, Charaka, Dridhbala, CharakaSamhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi,2014, Ch. Sha. 8/6, 920

<sup>29</sup>Bhava Prakasha (part 1&2) Bhavamishra with Vidhyotini Hindi commentary by Shri Brahma Shankar Mishra, 9<sup>th</sup> edition 1999, Purvakhand 3/17; 22

<sup>30</sup>Agnivesha, Charaka, Dridhbala, Charaka Samhita, elaborated Vidyotini Hindi Commentary by Pt. Kashinatha Shastri and Dr. Gorakha Natha Chaturvedi, Part-1,2 Chaukhamba Bharti Academy, Varanasi,2014, Ch. Sha 8/6; 920

<sup>31</sup>Kashyapa Samhita, Pt. Hemraja Sharma, Vidyotini Hindi commentary, Chaukhamba Sanskrit Sansthan, varanasi Reprint 2013, Ka. K. 6/36 – 38, 42,49; 192

<sup>32</sup>Kashyapa Samhita, Pt. Hemraja Sharma, Vidyotini Hindi commentary, Chaukhamba Sanskrit Sansthan, varanasi Reprint 2013, Ka. S. Si. 3/20; 157

<sup>33</sup>Text Book of Gynaecology including Contraception D. C. Dutta, 6<sup>th</sup> edition, Chapter 16, Pg – 229-230

<sup>34</sup>Jeffcoate's principle of Gynecology 8<sup>th</sup> edition, chapter 46, pg 654