

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

SJIF Impact Factor: 5.922

Case Report
ISSN 2455-3301
WJPMR

BAD OBSTETRIC HISTORY MANAGED BY AYURVEDIC LINE OF TREATMENT – A CASE STUDY

Dr. Turlapati Vishala Srinivas^{1*} and Dr. Monika A. Kate²

¹Professor, Dept. of Stree Roga & Prasuti Tantra, Yashwant Ayurvedic College, Post Graduate Training & Research Center, Kodoli, Maharashtra.

²P.G. Scholar, Dept. of Stree Roga & Prasuti Tantra, Yashwant Ayurvedic College, Post Graduate Training & Research Center, Kodoli, Maharashtra.



*Corresponding Author: Dr. Turlapati Vishala Srinivas

Professor, Dept. of Stree Roga & Prasuti Tantra, Yashwant Ayurvedic College, Post Graduate Training & Research Center, Kodoli, Maharashtra.

Article Received on 21/12/2023

Article Revised on 11/01/2024

Article Accepted on 01/02/2024

ABSTRACT

In this case study patient aged 26 years with previous neonatal death with previous Full term vaginal delivery with a history of pregnancy-induced hypertension and HELLP syndrome with Postpartum haemorrhage in a previous pregnancy. The patient came into the outdoor patient department with a complaint of two months of amenorrhea with per vaginal spotting for 5 days for that we advised her urine pregnancy test which is positive so we advised her ultrasound which is suggestive of partial molar pregnancy for that Dilatation and curettage were done. After that, she came to the outdoor patient department in December 2012, to get treatment for her next healthy pregnancy. The patient had a known case of chronic hypertension with a low body mass index. After her two pregnancies, proper sutika paricharya was not followed so dhatukshaya awashtha was there so that she had a Low Body Mass index and doshadhatuparikleda was there and so was the hypertension. In this case, study there was no sutika paricharya followed after delivery so dhatukshaytwa, doshdhatuparikledatwa, and garbhashayadushti were there after delivery. From detailed history, involvement of vitiated vata, kapha dosha with rakta dhatu was noticed. After taking these things in mind we treated her accordingly with Ayurvedic shamana and shodhana chikitsa. With the above-mentioned treatment, the patient reduced her complaints, Conceived naturally and delivered with a healthy baby. An attempt is made in this article to analyze the probable cause of her bad obstetric history and and management strategy adopted.

KEYWORDS: Sutika Paricharya, Dhatukshaya Awashtha, Tridosha, Shaman Chikitsa, Shodhana Chikitsa, Doshadhatuparikleda.

INTRODUCTION

Pregnancy is a crucial event in life that requires considerable physiological and psychological adjustment by the mother; by accepting it she starts an incredible journey of life.

Rather the pregnancy loss is a frustrating and challenging problem for the couple as well as for obstetrician.

The term BOH (Bad Obstetric History) implies recurrent miscarriages, a History of previous unfavourable fetal outcomes in terms of two or more consecutive spontaneous abortions, early neonatal deaths, stillbirths, intrauterine fetal death, preterm births & congenital anomalies. The term "bad obstetric history" is often loosely used to signify that a woman has had previous disappointments in childbearing.^[1]

In Ayurveda, Putraghni Yonivyapad and Jatagni Yonivyapad are described in which causes of repeated

abortions and repeated early neonatal deaths are explained. Acharya Chakrapani explains that fetuses irrespective of sex are destroyed, still, it is termed Putraghni as the destruction of male progeny predominates. [2]

A recent study was carried out on BOH by G Singh & K Sindhu which was a prospective type, concluding APLA, hypertension, malpresentation, cervical incompetence, preterm deliveries and caesarean section were found significantly more in the BOH group.

According to Acharya Charaka factors responsible for the normal delivery of a normally developed full-term fetus are shuddha - shukra, artava, aatma, garbhashaya evum Kala.

Acharya Charaka also mentioned that After delivery proper sutika paricharya should be followed which

www.wjpmr.com Vol 10, Issue 2, 2024. ISO 9001:2015 Certified Journal 242

includes vata dosha shaman, and garbhashaya shodhana for collected dushita rakta. [3]

Also, Acharya Charaka mentioned there is doshadhatuparikledatwa after garbhapata. In this case, study there was no sutika paricharya followed after delivery so dhatukshaytwa, doshdhatuparikledatwa, and garbhashayadushti were there after delivery. [4] Due to the dhatukshaya patient's body mass index was low so we treated her aagnimandya and dhatukshaya with deepaniya aushadhi and for Bruhana we gave her jeevaniya and bruhanuya aushadhi with snehapana.

vatprakopa After deliveries were treated with basti chikitsa and vatahara chikitsa. Garbhashaya shodhana was done. Due to doshadhatuparikledatwa & rakta dhatu dushti there was chronic hypertension throughout after first pregnancy for which amapachana was done.

In Putraghni and Jatagni yonivyapad vatadosha dushti is there so here we treated vatadushti also.

After all these factors patient conceived naturally and delivered a healthy baby without any medical illness.

CASE PRESENTATION

A patient aged 26 years, married for 6 years (non-consanguineous) registered in the outdoor patient department on 16th Dec 2012 with a bad obstetric history. She had her first pregnancy in November 2011, and delivered normally - the neonate died after 1 day of delivery. She had a history of pregnancy-induced hypertension with HELLP syndrome with postpartum haemorrhage (DIC) in her first pregnancy. A blood transfusion was done. The patient was in an unconscious condition and recovered after 15 days. After that, she had chronic hypertension and was on a tab of emadopa 250mg - twice daily. Her weight was 37kg and her body mass index was 16.

Her second pregnancy was a partial molar pregnancy in November 2012, with dilation and curettage done.

The patient came for registration for the first time in the outdoor patient department of Prasuti Tantra and striroga on 16th December 2012. On examination, her blood pressure was 160/90mmhg, P/S, and P/V findings are NAD.

After that, we treated her for 3 months with - Folic acid-5mg once daily, Garbhashaya shodhana, amapachana, snehapana, Basti, Deepaneeya, jeevaneeya, bhrihmana, vatahara chikitsa.

After 3 months she came for a follow-up.

On examination, her BP was between 140-160/90-100mmhg, Shifted her to a tablet of telmisartan 40mg. Menstrual history: she had regular cycles with the normal flow for 3-4 days from March to May. Follicular monitoring was done in March 2012 no follicles were

seen. From May 2012 her blood pressure remained at 120/70mmhg so we stopped her antihypertensive medications.

She came for the next follow-up in July with a Urine pregnancy test positive. Started her on tab nifedipine but her BP fell to 90/60 so we stopped antihypertensive medicine. Her Last menstrual period was on 12th July 2013. Throughout pregnancy, there was no antihypertensive or anticoagulant medication. She delivered on 4th April 2014 with a male baby of 3 kg with elective LSCS due to breech presentation. There were no intraoperative or post-operative complications.

Diagnostic Parameters

She came with the report – on.

16/12/2012

Hb-8gm/dl.

21/08/2012 - USG report

Single intrauterine gestation. Gestational sac seen.

A big yolk sac was seen and measured 10.0 mm.

No cardiac activity seen.

Fetal Biometry.

CRL - 4 mm (6 weeks 4 Days).

Excessive chorionic tissue is seen with hydropic changes, snowstorm appearance.

A small fetal pole seen.

Impression

Single intrauterine gestation corresponding to a gestational age of 10 Weeks 4 Days

? Partial mole

13/12/2012 - TORCH all ten- Negative

13/12/2012- Lupus anticoagulant- absent

14/03/2014

Hb-9.9gm/dl

TLC - 12390/cmm

PLT - 1,23L /cmm

25/03/2014

Hb-12.1gm/dl

TLC-12920/cmm

PLT - 1,82L/cmm

LFT - WNL

Alkaline phosphatase-196.96

RFT - WNL

Urine - pus cells -8-10

EC- few squamous cells

Albumin- absent

USG -Early obstetric scan - (04/09/2013)

Single live early intrauterine pregnancy of 8.3 wk

Fetal Pole- present

Yolk Sac-4mm

Cardiac Activity-present

Fetal Activity- present

Fetal Movements- present

MSD- 35.0 mm

CRL- 17.0 mm

Srinivas et al.

USG- (21/10/2013)

GA - 14 weeks 3 days (By LMP)

GA -15weeks 2days (By USG)

BPD-32mm (15+4weeks)

HC-116mm (15+3weeks)

AC-91mm (15+3weeks)

FL- 15mm(14+1 weeks)

Average fetal weight - 132gms

USG (03/01/2014)

GA-25weeks (By USG)

BPD-65mm

HC-241mm

AC-218mm

FL-47mm

Average fetal weight -909gms

USG - ANC + Doppler (04/03/2014)

GA - 33weeks 3 days (By LMP)

GA - 33 weeks 4 days (By USG)

BPD-85mm

HC-316mm

AC-289mm

FL-70mm

Average fetal weight -2201gms

Placenta - Posterior

Liquor - Normal

Umbilical cord - Two arteries and one vein

Fetal activity present

On screening Doppler - Umbilical artery shows a normal

flow pattern (PI - 0.60, RI - 0.45, S/D - 1.80)

USG - ANC - growth scan (27/03/2014)

GA -36weeks 6days (By LMP)

GA - 37 weeks (by USG)

BPD-96mm

HC-348mm

AC-321mm

FL-71mm

Average fetal weight -2900gms

Presentation- Breech

Placenta - fundal

Maturity grade -2

AFI - 8cm (adequate)

GROWTH PARAMETERS.

GROWIII I ARAMETERS.								
SR. NO.	DATE	GA-LMP	GA -USG	BPD	НС	AC	FL	AVG. FETAL WEIGHT
1.	04/09/ 2013	7WEEKS 5DAYS	8 WEEKS	35MM (MSD) 8WEEKS 4DAYS	17MM (CRL) 8WEEKS 2DAYS			
2.	21/10/ 2013	14WEEKS 3DAYS	15WEEKS 2DAYS	32MM(31) 15WEEKS 4DAYS	116MM 15WEEKS 3DAYS 108	91MM 15WEEKS 3DAYS 96	15MM 14WEEKS 1DAY	132 GMS
3.	03/01/ 2014		25WEEKS	65MM	241MM	218MM	47MM	909 GMS
4.	04/03/ 2013	33WEEKS 3DAYS	33WEEKS 4DAYS	85MM	316MM	289MM	70MM	2201 GMS
5.	27/03/ 2014	36WEEKS 6DAYS	37WEEKS	96MM 92	348MM 317	321MM 325	71MM	2900 GMS

Treatment advised to the patient

The patient visited in December 2012 for the first time with a bad obstetric history with low BMI (16), with k/c/o chronic hypertension with postpartum dhatukshaya, doshadhatuparikleda, agnimandya and garbhashaya dushti.

She was on tab. Emdopa 250mg twice daily for hypertension.

For Agnimandya and doshadhatuparikleda we gave her deepaniya and aampachaka drugs. For dhatukshaya, we gave her jeevaniya, and bruhaniya aushadhi with snehapana. For garbhashaya dushti, we gave her matrabasti with balataila.

On the first visit, we gave her - nagakeshar churn 3gm + panchakola churna 1gm +swarnamakshik bhasma 250mg

twice daily with Madhu for 3 months (December 2012-February 2013). Tab folic acid 5mg given for 3 months. On her next visit, on the 5th day of her menses, we gave her bala taila matrabasti (60ml) for 14 days and ashwagandha ksheerpaka 30ml - once daily for 14 days for 3 months (March 2013 to May 2013) For Hypertension, we shifted her to Tab. Telmisartan 40 mg. All medications were held after May 2013.

After 6 months of treatment, the patient gained 7kg of weight and her Body mass index was 19.5 from 16. Her haemoglobin was raised from 8gm/dl to 9.9gm/dl.

In a follicular study done in June 2013, a follicle of 20mm size was seen.

In July 2013, a patient came with a positive report of urine pregnancy test.

We shifted her to tab nifedipine 10mg- twice daily but after taking the tablet patient got hypotension so all antihypertensive medications were held. Her haemoglobin raised to 12.1gm/dl.

Throughout pregnancy, she gained 10kg weight and delivered with male baby of 3kg with LSCS due to breech presentation. No Intraoperative and postoperative complications were there.

With the help of Ayurvedic treatment modalities, we treated her postpartum dhatukshaya, garbhashaya dushti, doshadhatuparikleda, and agnimandya which helped her to carry out a healthy pregnancy without any complications.

Assessment parameter

After treatment repeat investigations, like haemogram, urine pregnancy test, and ultrasonography prove positive outcomes for treatment.

Mode of action of drugs

1) Panchakola Churna - Panchakola contains drugs such as Pippali (Piper longum), Pippalimoola (Root of Piper nigrum), Nagara (Zingiber officinale), Chavya (Piper chaba) and Chitraka (Plumbago zeylanica). [5] Panchakola has the Katu Rasa dominancy which is Agnidipana Rasa.

Vipaka: Vipaka of Panchakola is Katu. The Rasa of the Dravya is the same as that of Vipaka so that Karya will occur according to the Rasa i.e. Agnidipana.

Virva: Virva is according to the Rasa i.e. Ushna since again the Karya will occur according to the Rasa (Katu). This shows that Panchakola has an augmenting effect on Agnidipana according to the Rasa, Vipaka and Virya.

Because of all these properties of panchakola churna it is used for agnidipana as dipaniya Dravya and aampachana.

2)Nagkeshar churna - kashaya rasa, ruksha, laghu, ushna virya and aam pachaka. It is used here as aampachaka Dravya. [6]

3)swarnamakshika bhasma - Swarnamakshika is a compound of Copper, Iron and Sulphur that has a wide range of therapeutic efficacy. It is frequently used in the form of bhasma alone or with other herbomineral drugs mainly in the treatment of Jwara, Pandu, Anidra, Prameha, Kshaya etc., and also for Rasayana and Vajikarana purposes.[7,8]

It is used here as rasayana for brihana kshayanashana.

4)Bala taila - Taila used as vatavikara nashak, balavardhaka, beneficial for skin, yonivishodhaka, it helps for sharira-Drudhikarana. [9] Bala has properties like Sheetavirya, balya, rasayana, vrishya, prajasthapana, sangrahi, vata-pittahar.[10]

Matrabasti - it is a type of snehabasti. Vatarogi, mandagni, durbala etc should have matrabasti daily for balavardhana and vatanulomana.

Here we gave bala taila matrabasti for garbhashaya shodhana, prajasthapana and vatanulomana.[11]

5) Ashwagandha ksheerpaka - Ashwagandha has properties like tikta & kashaya rasa yukta, ushnavirya, balakaraka, shukravardhana, rasayana, vata, kapha, shwitra, shotha, kshaya nashaka. [12]

For ksheerpaka godugdha used. Godugdha is useful in urahakshta, kshayaroga, shrama, bhrama, mada, shwasa, trishna, mutrakrichha, rakta-pitta vikara. It is balya, medhavardhaka and jervaniya. [13]

Because of these properties of ashwagandha and godugdha ashwagandha ksheerpaka is given.

- 6) Tab Emdopa 250mg It reduces elevated blood pressure by dilating blood vessels. Emdopa 250mg Tablet is an alpha-2 agonist. It works by relaxing blood vessels which makes the heart more efficient at pumping blood around the body. It contains methyldopa 250mg. [14-17]
- 7) Tab Telmisartan 40mg- Telmisartan is an angiotensin receptor blocker (ARB). It relaxes blood vessels by blocking the action of a chemical that usually makes blood vessels tighter. This lowers the blood pressure, allowing the blood to flow more smoothly to different organs and the heart to pump more efficiently. [18-24]
- 8) Tab Nifedipine 10mg -Nifedipine 10mg Tablet is a calcium channel blocker. In high blood pressure, it normalizes the blood pressure by relaxing the blood vessels to reduce the pressure on them, thereby improving the blood flow in the body. The enhanced blood flow in the body further relaxes the heart muscles by reducing the workload on the heart. It also improves the oxygen flow to the heart, thereby, preventing any heart-related chest pain. [25-32]

DISCUSSION

Becoming mother is the most cherished dream of all women. Ritu, Kshetra, Ambu and Beeja are the four essential factor for fertility. [33] Defect in any of these result in miscarriages (infertility). Vata is prime cause of Abortion.

Most women will progress through pregnancy in an uncomplicated fashion & deliver a healthy infant requiring little medical intervention, unfortunately, a significant number will have medical problems, which will complicate their pregnancy or develop such a

serious condition that the lives of both themselves and their unborn child will be threatened. Undoubtedly, good antenatal care has made a significant contribution.

During pregnancy there are progressive anatomical, physiological & biochemical changes not only confined to the genital organs but also to all systems of the body. This is principally a phenomenon of maternal adaptation to the increasing demands of growing fetus.

While treating the patient with bad obstetric history one should go thoroughly examination of patient followed by proper line of a treatment only then we will get the fruitful outcome. In Ayurveda we can compare bad obstetric history with putraghni yonivyapada.

In Putraghni Yonivyapada (Repeated Abortion) Kshetra and Ambu plays major role.

Repeated Abortion take place due to Ruksha Ahara and Vihara thus lead to Vataprakopa which in turns causes Shonita and Artava Dushti result in Garbha Vinasha (Foetal loss). Thus, the medicine used in this study are vatahara, jeevaniya, bruhaniya, rasayana & garbhashaya shodhaka.

CONCLUSION

This case report shows an insight into the successful management of bad obstetric history through ayurvedic treatment modalities. Here it shows that with proper clinical evaluation & systemic approach to ayurvedic treatment bad obstetric history can be cured simultaneously.

The results obtained in this single case study are encouraging and the protocol followed here may be subjected to trial in a larger sample.

REFERENCES

- 1. Donald, I. (1969): Practical Obstetric Problems, 4th ed., p. 99. London: Lloyd-Luke Medical Books.
- Dr. Bhramanand Tripathi, Charak Samhita Vol. II, Edition 2011, Varanasi; Chaukhamb Surbharati Prakashan, Adhyay 30/28-29, Page no. 1015.
- ASTANGA HRDAYAM OF SRIMADVAGBHATA, CHAUKHAMBA SANSKRIT PRATISHTHAN (Oriental Publishers & Distributors) Garbhavkranti sharir adhyaya 1, shlok no. 94-97, page no. 354, 355.
- ASTANGA HRDAYAM OF SRIMADVAGBHATA, CHAUKHAMBA SANSKRIT PRATISHTHAN (Oriental Publishers & Distributors) garbhavyapad sharir adhyaya 2, page no. 358, 359.
- BHÂVAPRAKÃSA NIGHANTU, Foreaces by Padmashree' Prof. K. C. Chunekar Edited by Dr gangasahaya pandey, Reprint, 2020. Haritakyadivarga, Shlok no 73, page no. 24.
- BHÂVAPRAKÃSA NIGHANTU, Foreaces by Padmashree' Prof. K. C. Chunekar, Edited by Dr

- gangasahaya pandey, Reprint, 2020. Karpuradi varga, Shlok no 69, 70. page no. 219-222.
- **RASARATNA SAMUCHCHAYA** OF VAGBHATÄCHÄRYA Translated With 'Rasprabha' Hindi Commentary Critical Notes and Tripathi Introduction By Dr. Indra Dev Ayurvedacharya Edited By Dr. Kapidev Giri. CHAUKHAMBHA SANSKRIT **SANSTHAN** VARANASI CHAUKHAMBHA **SANSKRIT** SANSTHAN Publishers and Distributors of Oriental Cultural Literature, Edition: Reprint, 2013; Adhyaya 2, shlok no. 73-77, page no. 17.
- CHARAKA SAMHITA, CHAUKHAMBHA ORIENTALIA, Part 1, Acharya vidyadhara Shukla, Pro. Ravidatta Tripathi, Edited by Vd. Vijay Shankar Kale, First edition 2013. Adhyaya no. 13, Snehahadyaya, shlok no. 15, Page no. 208.
- 9. Rasa-Bhaishajyakalpana Vigyana, Vaidya Santosh Kumar Sharma "Khandal", Thirteen Edition 2017, Rasadravyavargikarana, page no. 171.
- 10. BHÂVAPRAKÃSA NIGHANTU, Foreaces by Padmashree' Prof. K. C. Chunekar Edited by Dr gangasahaya pandey, Reprint, 2020. Guduchyadivarga, Shlok no 142-146. page no. 351, 352.
- 11. ASTANGA HRDAYAM OF SRIMADVAGBHATA, CHAUKHAMBA SANSKRIT PRATISHTHAN (Oriental Publishers & Distributors), Sutrasthana, adhyaya 19, Bastividhiradhyaya, shlok no. 67-69. page no. 239, 240.
- 12. BHÂVAPRAKÃSA NIGHANTU Foreaces by Padmashree' Prof. K. C. Chunekar Edited by Dr gangasahaya pandey, Reprint, 2020 Guduchyadivarga, Shlok no 189, 190. page no. 379, 380.
- 13. ASTANGA HRDAYAM OF SRIMADVAGBHATA, CHAUKHAMBA SANSKRIT PRATISHTHAN (Oriental Publishers & Distributors), Sutrasthana, adhyaya 5, Dravdravya vigyaniya adhyaya, shlok no. 21, 22. page no. 69.
- 14. https://www.drugs.com/pregnancy/methyldopa.Html.
- 15. Michel T, Hoffman BB. Treatment of Myocardial Ischemia and Hypertension. In: Brunton LL, Chabner BA, Knollmann BC, editors. Goodman & Gilman's: The Pharmacological Basis of Therapeutics. 12th ed. New York, New York: McGraw-Hill Medical, 2011; pp. 773-74.
- Benowitz NL. Antihypertensive Agents. In: Katzung BG, Masters SB, Trevor AJ, editors. Basic and Clinical Pharmacology. 11th ed. New Delhi, India: Tata McGraw Hill Education Private Limited, 2009; p. 173.
- 17. Briggs GG, Freeman RK, editors. A Reference Guide to Fetal and Neonatal Risk: Drugs in Pregnancy and Lactation. 10th ed. Philadelphia, PA: Wolters Kluwer Health; 2015. p. 894.
- Pfeffer MA, Opie LH. Inhibitors of the Renin-Angiotensin-Aldosterone System. In: Opie LH, Gersh BJ, editors. Drugs for the Heart. 8th ed.

- Philadelphia, Pennsylvania: Elsevier Saunders; 2013. p. 157.
- 19. Briggs GG, Freeman RK, editors. A Reference Guide to Fetal and Neonatal Risk: Drugs in Pregnancy and Lactation. 10th ed. Philadelphia, PA: Wolters Kluwer Health; 2015. pp. 1322-23.
- Telmisartan. Bracknell, Berkshire: Boehringer Ingelheim Limited; 1998 [revised Nov. 2017]. [Accessed 20 Mar. 2019] (online) Available from:
- 21. Telmisartan. Ingelheim, Germany: Boehringer Ingelheim Pharma KG, 1998; [Accessed 20 Mar. 2019] (online) Available from:
- Chaves RG, Lamounier JA. Breastfeeding and maternal medications. J Pediatr (Rio J), 2004; 80(5 Suppl): S189-S198. [Accessed 19 Mar. 2019] (online) Available from:
- 23. Central Drugs Standard Control Organisation (CDSCO). [Accessed 19 Mar. 2019] (online) Available from:
- Telmisartan [Package Insert]., Gangtok, Sikkim: Torrent Pharmaceuticals Ldt, 2022; [Accessed 01 Aug. 2023].
- 25. Michel T, Hoffman BB. Treatment of Myocardial Ischemia and Hypertension. In: Brunton LL, Chabner BA, Knollmann BC, editors. Goodman & Gilman's: The Pharmacological Basis of Therapeutics. 12th ed. New York, New York: McGraw-Hill Medical, 2011; pp. 757-58.
- 26. Opie LH. Calcium Channel Blockers. In: Opie LH, Gersh BJ, editors. Drugs for the Heart. 8th ed. Philadelphia, Pennsylvania: Elsevier Saunders, 2013; pp. 84-86.
- 27. Briggs GG, Freeman RK, editors. A Reference Guide to Fetal and Neonatal Risk: Drugs in Pregnancy and Lactation. 10th ed. Philadelphia, PA: Wolters Kluwer Health, 2015; pp. 978-79.
- 28. Nifedipine. New York, New York: Pfizer Labs; 2013. [Accessed 19 Mar. 2019] (online) Available from.
- Chaves RG, Lamounier JA. Breastfeeding and maternal medications. J Pediatr (Rio J). 2004; 80(5 Suppl): S189-S198. [Accessed 19 Mar. 2019] (online) Available from:
- 30. National Health Sciences. Nifedipine. [Last Reviewed: 18 Feb. 2022]. [Accessed 25 Jul. 2023]
- 31. Khan KM, Patel JB, Schaefer TJ. Nifedipine. [Updated 2023 May 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing, 2023; [Accessed 25 Jul. 2023] (online) Available from:
- 32. Central Drugs Standard Control Organisation. Nifedipine. [Accessed 25 Jul. 2023]
- Sushruta Samhita, Vol. 1 sharir sthana, 2/35
 Mudhagarbhanidana Adhyaya, 8/3 edited byKaviraj
 Kunjalal, Published By Author, Culcutta 1911.
- 34. Ashtanga Sangraha, with Sasilekha Sanskrit Commentary by In-du, Edited by Dr. Shivprasad Sharma, Chaukhamba Sanskrit Series Publication, Varanasi, 2008; 38(37): 9658.
- Vagbhata, Astanga Hrudaya, Sarvanga Sundara Commentary of Arunadatta and Ayurveda Rasayana

Commentary of Hemadri, Edited by; Pandit Hari Sadasiva Sastri Paradakara Bhisagacharya, Chaukhambha Surabharati Prakashan, Varanasi, Reprint, 2010; 33(34): 9569.