

AN AYURVEDIC APPROACH FOR THE MANAGEMENT OF AVASCULAR NECROSIS (AVN) OF FEMORAL HEAD WITH PANCHATIKTA SIDDHA MAJJA BASTI AND OTHER FORMULATIONS - A CASE STUDY

Ashish Mandloi^{1*}, Sonika Solanki² and Kamini Soni³

^{1,2}PG Scholar, Department of Panchakarma, Pt Khushilal Sharma Govt. Ayurveda College & Institute Bhopal [MP].

³Associate Professor, Department of Panchakarma, Pt Khushilal Sharma Govt. Ayurveda College & Institute Bhopal [MP].

Article Received on
07 May 2024,

Revised on 27 May 2024,
Accepted on 17 June 2024

DOI: 10.20959/wjpr202413-32781



*Corresponding Author

Dr. Ashish Mandloi

PG Scholar, Department of
Panchakarma, Pt Khushilal
Sharma Govt. Ayurveda
College & Institute Bhopal
[MP].

ABSTRACT

Avascular Necrosis (AVN) is a progressive degenerative condition of bone, caused by interruption to the blood supply, also called ischemic bone disease. AVN of femur head is that the most typical type of necrosis of the bones but it can affect any bone. Because the arteries supplying the femoral head region are so tiny, thus area is simply susceptible to injury followed by mere dislocation or a subcapital fracture (near the head) of femur. AVN is asymptomatic in the early stage but as the disease progress there is constant pain with decrease in the function of joints. Every year, over 16,000 individuals in India get AVN of the femoral head. In contemporary medicine, NSAIDs, bone grafting, and hip joint replacements are used to treat AVN. Till contemporary medicine has no conservative treatment specifically developed for AVN patients. According to Ayurveda on the basis of *Dosha* and *Dushya* Avascular Necrosis resembles with the

Asthimajjagata Vata. *Raktavaha Srotas*, *Asthivaha Srotas* and *Majjavaha Srotas* are hampered in *Asthimajjagata Vata*. *Acharya Charaka* described the *Lakshana* of *Asthimajjagat Vata* are similar to symptoms of AVN. **Case Report** - This is the case of 27-year-old male was diagnosed with AVN of bilateral hip joint. **Aim and Objective** - To evaluate the efficacy of various Panchakarma procedure especially *Panchatikta siddha Majja Basti*. **Result** - The therapy provided marked relief in pain and stiffness along with

improvement in gait and difficulty in walking was reduced. **Conclusion** - AVN is a chronic degenerative disease which occurs when a blood flow to the bone is interrupted or reduced. On the basis of this case study, it can be concluded that *Panchatikta Siddha Majja Basti* along with various Panchakarma procedure is effective in the management of AVN of femoral head.

KEYWORDS: Avascular Necrosis, *Asthimajjagata Vata*, *Panchatikta Siddha Majja Basti*

INTRODUCTION

Avascular necrosis (AVN) is a condition that occurs due to disruption and loss of blood supply to the bone which leads to cellular death of bone tissue, also known as osteo, aseptic, or ischemic bone necrosis. If AVN affects the bones of a joint, it often leads to destruction of the articular surfaces. It primarily affects epiphysis of long bones such as the femur and also involves shoulder, knee and hip joints etc. Other common sites include the humerus, shoulders, knees, ankles and the jaw.^[1] Many people have no symptoms in the early stages of avascular necrosis. As the condition worsens, the affected joint may hurt under stress. AVN is most commonly encountered in the hip.^[2,3] Risk factors include Alcoholism, use of corticosteroids and various medical disorders such as sickle cell disease, systemic lupus erythematosus etc.^[4] In early stages AVN is difficult to diagnose from clinical findings and plain radiograph so early MRI should be done to verify clinical suspicion.^[5] All musculoskeletal disorders are described under *Vatavyadhi* in Ayurveda. The *Lakshana* of *Asthimajjagata vata*, as described by Acharya Charaka are similar to symptoms of AVN and there are Degradation of bone tissue and bone marrow in AVN. The *Lakshana* of *Asthimajjagata Vata* are *Bhedoasthiparvanam* (breaking type of pain), *Sandhishool* (hip joint pain), *Mamskshaya* (Muscle wasting of affected joint), *Balakshaya* (Weakness in affected joint) and *Aswapna santata ruk* (Insomnia due to pain).^[6] So through *Dosh (Vata)*, *Dushya (Majja Dhatu /bone marrow)* and *Samprapti* (Pathogenesis) AVN can be correlated with *Asthimajjagata Vata*.

If *Asthimajjagata Vata* is treated in its acute stages, it is curable; but, in its chronic stages, full recovery becomes more challenging. The present day modern modalities includes administration of anti-inflammatory analgesics, steroid therapy, arthroplasty, femoral head graft, hip compression, hip replacement, osteotomy, and physiotherapy; each of them is having its own limitations and they have serious side effects like loss of memory, weight gain, gastrointestinal disturbance, habit forming nature and dermatological diseases like psoriasis, eczema, contact dermatitis and SLE.^[7] In modern text there is no single pathogenic

mechanism leading to avascular necrosis established. but there is most important known route cause of Osteonecrosis/bone infraction is impaired vascular supply irrespective of cause, which can be considered as *Srotavrodha* (vascular obstruction). This eventually results in *Vata* vitiation and may be caused by *Meda* vitiation. The factors that lead to the vitiation of *Vata* finally create *Asthidusthi*, which limits movement and causes a cracking type of pain in the affected part's bones and joints. So, it is clear that *Vata* plays important role as *Vikaraprakrti* in AVN. Symptoms of *Majjadusthi* or *Majjagata Vata*, such as *Santata Ruk* (continuous pain), are involved in the later stages of AVN if they are not addressed early. All of these factors may contribute to *Asthimajja Kshaya*, which results in the death of bone tissue and the collapse of bone leading to *Asthimajjagata Vata*. Therefore, avascular necrosis of femoral head can be clinically correlated with *Asthimajjagata Vata*.^[8] Ayurvedic approach for the femoral head of AVN through *Panchtikta Ghrit Guggulu*, *Ksheerbala Avartit* along with *Panchtikta Ksheer Majja Basti* and *Ksheerbala tail Anuvasan Basti*.

CASE REPORT

A 27-year-old male patient came to the OPD of Pt. Khushilal Sharma Govt. Ayurveda Institute, Bhopal having complaints of pain in B/L hip joints which radiates to both thigh region (Rt. > Lt.), morning stiffness more than 30 minutes but the pain was constant throughout the day, pain in groin region, pain during prolonged sitting, difficulty in walking, restricted movement of both lower limb, sleeplessness due to pain. The patient was well before 13 months then gradually pain start in right hip joint with stiffness which radiates in lower limb then after 4 months her condition become worsened and felt pain in left hip joint too. The pain aggravates during prolonged sitting on the chair or any other activity. The pain was so severe so her gait has been changed. Moreover, his day-to-day activities were also hampered due to pain and stiffness. The patient had received allopathic treatment (analgesic and physiotherapy) for 5-6 months but did not get satisfactory relief. Thus, she approached further for Ayurvedic management.

History of patient

Past history

Patient suffering from covid and taking steroids for longer duration.

Family history

No, any important family history.

Personal history

Diet - Mixed diet, prefers spicy.

Appetite - Normal

Bowel - Clear

Bladder - Normal

Sleep - Disturbed due to pain.

Allergy and addiction - Nil.

General examination – At the time of admission in IPD, patient was examined properly and following observation was noted.

BP=130/80mmHg

Pallor – Absent

CVS- S1 S2 Normal

CNS- Conscious, well oriented with name, place and person.

Locomotor System- Movement of hip joint is reduced, SLR of left leg 50 and Right 30, muscle bulk and tone are normal, he was unable to walk more after taking 20 steps.

Investigation reports brought by patient revealed

1. CBC normal range
2. ESR normal
3. X- Ray of hip joint show Avascular necrosis of bilateral hip joint
4. MRI- left Hip hyperintense marrow signals representing edema noted in heads neck of femur and posterior coloumns roof of acetabulum, there is associated subcortical collapse in anterosuperir aspect of the femoral head. Right hip marrow edema subcortical collapse in posterior superior aspect of the femoral head above imaging findings are in favor of grade 3 AVN of bilateral hip with mild bilateral hip joint effusion.

Assessment criteria

The range of the movement of the hip joint i.e., Adduction, Abduction, Flexion, Extension, Internal rotation, External rotation was measured. [Table No.4] Assessment was done on the basis of subjective parameters. [Table No.1] Pain and morning stiffness was markedly reduced after *Basti* course. After that patient was able to walk without any difficulty, leg raising from 30° to 60° and trendlenberg sign was improved.

Table 1: Grading of subjective parameters.

S. N.	Symptom	Criteria	Grade
1	Pain	No pain while walking	0
		Mild Pain while walking	1
		Moderate Pain while walking	2
		Severe pain while walking	3
2	Stiffness	No stiffness	0
		Stiffness for 10 - 30 min	1
		Stiffness for 30 - 60 min	2
		Stiffness for more than 1 hr	3
3	Movement of joints	Normal	0
		Mildly restricted	1
		Moderately restricted	2
		Severely restricted	3
4	Radiating pain	Pain never radiates	0
		Occasionally radiating	1
		Mostly radiating	2
		Radiating all the time	3
5	Gait	Unchanged	0
		Occasionally changed	1
		Walk with support	2
		Unable to walk	3
6	Sleep	Normal	0
		Occasionally disturbed	1
		Frequently disturbed	2
		Unable to sleep due to pain	3

Treatment plan

This diagnosed case of Avascular necrosis of the femoral head was admitted to the female general ward of Pt. K.L.S. Govt. Ayurveda Hospital, Bhopal with IPD no. 2023128 and undergo the following procedures.

Table 2: Panchakarma procedures.

S. N.	Procedure	Drug used	Dose	Duration
1	Madanaphaladi Niruha Basti (Shodhan Basti)	Madanphal, Vatsaka, Krutvedhana, dhamargava, Ikshwaku, jeemutak, Gomutra	350ml	Frist 3 days
	Sarvanga Patra Pinda Swedan	Eranda Patra, Nirgundi Patra, Shigru Patra, Ark Patra, Lemon, Harida, Coconut etc.	-	
2	Panchatikta Ksheer Basti	Panchatikta Dravya, Ksheer, Madhu, Sneha, Lavana	350 ml	4 th day to 14 th day (11 days)
	Pizhichil	Ksheerbala Tail + Vatashamak Tail	-	

4	Panchatikta Siddha Majja Basti	Panchatikta Dravya+ Majja	-	15th to 35 th day (21days)
	B/L Vankshana Basti + Sarvanga Shasti Shali Pinda Swedan	Ksheerbala Tail + Vatashamak Tail + Bala+Ashwgandha Churna+ Shali Chawal+ Dugdha		

Table 3: Oral drugs.

S. N.	Drug used	Dose
1	Panchatikta Ghrit Guggulu	2 Tab
2	Kaishor Guggulu	2 Tab
3	Rasnadi Guggulu	SOS

1. Contents of panchatikta

Nimba (*Azadirachta indica*), *Patola* (*Trichosanthes dioica*), *Kantakari* (*Solanum xanthocarpum*), *Guduchi* (*Tinospora cordifolia*), *Vasa* (*Adhatoda vasica*)

2. Extraction and Preparation of Majja

The large bones of *Gramya* (goat, sheep etc.) and *Anupa* (like pig, buffalo etc.) animals were collected. The bones were crushed into pieces and boiled in water for 7 days. By this process the *Majja Sneha* was obtained.^[9]

3. Processing of majja

The decoction of *Panchatikta* was made by adding the *Panchatikta Yavkut Churna* into the water and reducing it into 1/4th part. In this decoction the *Majja Sneha* was added and boiled for the next 3 days till the separation of *Majja*.^[9]

4. Basti vidhi

Prior to *Basti Sarvang Shasti Shali Pinda Swedan* was done. The *Panchatikta Siddha Majja Basti* was given in the form of *Sneha Basti* in which the *Shatpushpa* 10-12 gm and *Saindhav lavana* 6 gm was added. This *basti* was taken in the 150ml syringe and given in left lateral position of the patient with daily dose of *Majja Sneha* is 100 ml.

Treatment outcome

Table 4: Assessment Before and After treatment.

Symptoms	Before treatment	After t/t	After t/t
Pain	3	2	1
Radiating pain	3	1	0

Stiffness	2	1	0
Movement of joints	2	1	1
Gait	2	1	1
Sleep	3	1	0
Trendelenberg Sign	+ve	Improved	Improved

Table 5: Observation in range of movement of hip joint.

Range of Movement		Before Treatment	After Treatment
Abduction (30°-50°)	Right Leg	20	40
	Left Leg	30	50
Adduction (20°-50°)	Right Leg	20	25
	Left Leg	30	40
Flexion (110° 120°)	Right Leg	90	100
	Left Leg	100	120
Extension (10°-15°)	Right Leg	10	10
	Left Leg	10	15
Internal rotation (30°- 40°)	Right Leg	10	20
	Left Leg	20	30
External Rotation (40°- 60°)	Right Leg	20	20
	Left Leg	40	50

DISCUSSION

Avascular necrosis is the cellular death of bone constituents brought on by a disruption in blood flow, which results in the collapse of the bone and causes discomfort, loss of joint function, and eventually damage to the joint. The majority of AVN cases have an idiopathic cause and are linked to infections, alcoholism, and excessive corticosteroid use.

In this case study patient got Moderate relief in above symptoms of *Asthimajjagata vata*. Marked improvement in stiffness and timing of walking distance. Overall significant relief was found in this case.

Basti plays a major role in *Vatavyadhi* said to be *Ardhachikitsa* by Acharya Charak,^[8] cures not only *Vatika* disorders, but also beneficial in the imbalance of *Pitta*, *Kapha* and *Rakta Dosha*^[10] and *Samsarga*, *Sannipataja* condition of *Dosha*. *Snehan* and *Swedan* is also considered as the line of treatment of *Vata Vyadhi*.^[11] *Snehan* either internal or external is indicated for the disorder of *Asthimajjagata Vata*.^[12] *Swedan* helps in reducing the heaviness and stiffness.^[13] *Rakta*, *Asthi* and *Majja* are the main involved *Dhatus* in AVN.

If *Pakwashaya* is contaminated for a long time, the *Vayu* too will be vitiated and unsettled. Its control over the body functions become disturbed and we are exposed to wide array of

diseases, so we planned *Shodhan Basti* for first 3 days along with *Sarvanga Patra Pinda Swedana*.

The *Bastis* which are helpful in expelling the morbid *Vayu* will help in recovery of pathology in *Pakwashaya* and make it healthy. The *Bastis* given to purify or cleanse *Pakwashaya* or colon, will combat *Vata* vitiation, get it to normalcy and relieve one of all the disorders which have been caused by vitiated *Vayu*.

Thus, *Pakwashaya Shodhana Bastis* are helpful in removing colon pathology, cure the diseases of large intestine, control and balance value, cure diseases caused by morbid *Vayu*, to enhance health and immunity of the most important seat of *Vata*, which is also a remote control for all the activities of the body.

Patra pinda swedana: Once *Samayaka Rukshana Lakshana* observed *Patra Pinda Swedana* was planned to obtain the *Mridu Snigdha* in the body. *Patras* used for the *Patra Pinda Swedana* is mentioned in the *Swedopaga Gana*.

After 3 days we planned for *Sthanik Pizhichil* (*Kati Pradesh*) and *Panchatikta Ksheer Basti* for 11 days. *Panchatikta Kshira Basti's* constituents include *Tikta ras*, which is *Pradhanta* of *Vayu* and *Akasha Mahubhuta*.

The decoction mixed with *Ksheera* (milk), which has *Madhura* (sweet) and *Snigdha* (unctuous) features, helps control *Vata Dosha* and because of the *Sukshma Guna* (minute properties) of *Saindhva* (rock salt), It also gets up to the body's microchannel and aids in opening up fresh blood supply to the bone tissue. In this *Basti*, *Tikta Dravyas* are having *Tikta Rasa*, *Ushana Virya* (hot potency), *Madhura* and *Katu Vipaka* (pungent post digestive taste) which favours normal functioning of *Dhatvagni* (metabolic stage) facilitating increased nutrition to the *Asthi Dhatu*. *Ghrita* is *Madhura*, *Shita Virya* (cold potency), and *Vatashamak* (dummy of *Vata*). As a result, it settles *Vata*, enhances *Dhatu Upachaya* (tissue metabolism), and rejuvenates the body. *Ghrita* has the properties of *Sanskarasya Anuvartana* precipitating bioavailability of other drugs. Hence, helps in *Samprapti Vighatana* (breaking down of pathology) of the *Asthi Kshaya*. In *Asthikshayaaja Vikara*, *Tikta Dravya Sadhita Ksheera Basti* is particularly recommended.

Pizhichil or *Dhara* works on the similar principle of *Swedana* process. Based on the quality of the drug used, it does *Snehana* or *Rukshana*. Just like *Swedana* therapy, *Pizhichil* acts due

to its *Ushna* and *Teekshna* properties. The application of lukewarm/ mild hot medicated liquid increases the metabolic rate which causes vasodilation of the blood vessels. This vasodilation opens the smaller channels and increases the peripheral circulation. The pores in the skin open leading to an elimination of waste products through sweat. The increased circulation promotes better absorption of medicated liquid into the body. The four *Tiryak Dhamani* in the body divide into hundred and thousand times and become innumerable. These cover the body like a network and their openings are attached to *Roma Kupa* (skin pores). Through these *Roma Kupa*, the *Veerya* of *Abhyanga*, *Parishek*, *Avagaha*, *Alepa* enter the body after undergoing *Paka* by *Bhrajaka Pitta* in the skin. The *Bhrajaka Pitta* present in the skin gets stimulated and helps in transdermal absorption of the medicated liquid.^[14,15] The medicated liquid absorbed through the skin into the blood vessels shows systemic results all over the body. A probable hypothesis can be made for the action of *Pizhichil*.

For the next 21 days, *Panchatikta Siddha Majja Basti* along with *Shashtika Shali Pinda Swedan* was planned. *Majja Sneha Basti* plays an important role in *Asthi Pradoshajanya Vikar* by strengthening and nourishing the *Asthi Dhatu* (Bone tissue).

Asthi Sandhi is main site of *Vata* where *Shleshmaka Kaph* is located. *Panchatikta siddha Majja Basti* have *Tikta Rasa*, *Ushana Virya*, *Madhur*, *Tikt Ras* and *Madhura*, *Katu Vipaka* which are opposite to the *Vata*. Acharya Charak has described *Siddha Majja Basti* in which *Majja* is processed with *Panchatikta kwath*. The *Panchatikta siddha majja basti* is given in dose of 100 ml, this is helpful in retaining the medicaments for a longer duration, resulting in providing more nutrition to the bone tissue.

It nourishes *Majjadhatu*, which in turn nourishes *Asthidhatu*, due to the attributes of *Snigdha*, *Pichchila*, *Guru*, and *Brimhana-poshana Guna*. When both *Dhatus* are fed, *Vata shamana* occurs. Therefore, by the *Rasa* and *Vipaka* we might conclude that this *Basti* reaches up the *Asthi* elevating the *Majja dhatu* in *Asthi* and *Majjavaha srotasa*. This *Majja* provides nourishment for *Asthi* using its *Puran guna* (filling the *vata* in the *asthi dhatu*). *Ushna veerya* heals the *Vatajanya shoola* which implies that the entire *Basti dravya* is *Vata Shamaka*. Hence, the action of *Panchatikta Siddha Majja Basti* plays vital role in *Asthi Majjagata vata*. The *Panchatikta siddha majja basti* removes the *Avarana* of the *Vata* and increases the blood supply which is the main purpose of the this given treatment. Here the Avascular necrosis of femoral head on the basis of sign, symptoms, *Dosha* and *Dushya* is treated on the line of *Asthimajjagata Vata Vikara*. *Snehana* and *Swedana* is considered as the first line treatment of

Vata Vyadhi. For the treatment of *Asthi Dhatu Panchakarma* is clearly indicated and *Panchatikta Siddha Majja Basti* is advised. For fulfilling this aim *Basti Chikitsa* have been selected.

Before *Shashtika Shali Pinda Swedan Sarvanga Abhyanga* increase the circulation of blood and plasma it can stimulate and strengthen the lymphatic system, so it is easier to absorb *Guna* of *Shashtika Shali Pinda Swedan*.

Shashtika Shali Balavardhana and is *snigdha, Sthira, Dehadardhyakrita. Bala* and *Godugdha* that is used to cook the *Shashtika Shali* and to heat the bolus is *Snigdha, Balya Rasayana* and *Vatahara*. Further the *Swedana* cleans and opens up the channels of *Srotas* thus facilitates more nourishment and free movement of *Vata Dosha*. This result in the relief of spasticity and facilitates more nourishment and free movement of joints.

CONCLUSION

Panchatikta Siddha Majja Basti and *Panchatikta Ksheera Basti* along with *Sarvang Patra Pinda Sweda, Pishinchal* and *Shashtika Shali Pinda Swedan* shows remarkable symptomatic relief in the features of avascular necrosis of femoral head. We are able to reach the conclusion that in the case of *Asthimajjagata Vata* (AVN), the amalgamation of Panchakarma therapy and Ayurvedic medication illustrates substantial improvements and enhances the person's quality of life, so we suggested Ayurvedic treatment for this medical condition. This result needs to be studied in more numbers of populations for better assessment.

REFERENCES

1. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Vata vyadhichikitsa Samhita, Chikitsasthana; Adhyaya, Chaukhamba Surbharati Prakashan, Varanasi, 2014; 617: 28-33.
2. Matthews AH, Davis DD, Fish MJ, Stitson D. Avascular Necrosis, 2022. [Medline]. [Full Text].
3. Bose VC, Baruah BD. Resurfacing arthroplasty of the hip for avascular necrosis of the femoral head: a minimum follow-up of four years. J Bone Joint Surg Br, 2010; 92(7): 922-8. [Medline]
4. <https://m.timesofindia.com/city/pune/16000-cases-of-avascular-necrosis-each-year/articleshow/16817285>. (Accessed 18-06-21)

5. Bohndorf K, Roth A. Imaging and classification of avascular femoral head necrosis. *Orthopade*, 2018; 47(9): 729-734. [Pubmed]
6. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita, Chikitsasthana; Vativyadhichikitsa Adhyaya, Chaukhamba Surbharati Prakashan, Varanasi, 2014; 617: 10.
7. Epstein NN, Tuffanelli DL, Epstein JH. Avascular Bone Necrosis: A Complication of Long Term Corticosteroid Therapy. *Arch Dermatol*, 1965; 92: 170–80. (PubMed)
8. Vagbhata, ASTANGAHRADAYA, with commentaries, Sarvangasundara of Arunadatta & Ayurvedarasayana of Hemadri, Edited by Pt. Hari Sadasiva Sastri Paradakara, Reprint: Sutrasthana, Chapter No., Ayushkamiya Shlok no, 2010; 26: 16-1.
9. Shastri Kashinath, Chaturvedi Gorakhnath edited Charak Samhita of Agnivesha, revised by Charaka and Dridhbala, part, Chaukhambha Bharati Academy, Varanasi. Reprint, Chikitsa Sthana. 2009; 28: II.
10. Kaviraaj Ambikadutta Shastri, editor. Susruta Samhita. Chikitsa Sathana, Chapter. 2012 Edn. Varanasi: Chaukhambha Sanskrit Series Publication, 2012; 189: 35-6.
11. Harish Chandra Singh Kushwaha, editor (2009) Charaka Samhita. 28th Adhyaya 75-78th shloka Chikitsasthana. Varanasi: Chaukhambha Sanskrit Sansthan; reprinted, 2018; 1: 745.
12. Harish Chandra Singh Kushwaha, editor (2009) Charaka Samhita. 28th Adhyaya 93rd shloka Chikitsasthana. Varanasi: Chaukhambha Sanskrit Sansthan; reprinted, 2018; 1: 749.
13. Harish Chandra Singh Kushwaha, editor. (2009) Charaka Samhita. 28th Adhyaya 80th shloka Chikitsasthana. Varanasi: Chaukhambha Sanskrit Sansthan; reprinted, 2018; 1: 746.
14. Sushruta Samhita, Shaareer Sthana Dhamani Vyakaran Shaareer, 9/9. Available from: [HTTP:// niimh.nic.in/ebooks/esushruta](http://niimh.nic.in/ebooks/esushruta). [Last accessed on 2021 Mar 18].
15. Sushruta Samhita, Sutra Sthana Vranaprashanaadhyaya, 21/10. Available from: [http:// niimh.nic.in/ebooks/esushruta](http://niimh.nic.in/ebooks/esushruta). [Last accessed on 2021 Mar 18]. Su. Su 21/10