

UNDERSTANDING THE GROWTH PARAMETERS OF 7TH MONTH FETAL DEVELOPMENT WITH REFERENCE TO SAPTAME SARVANG PRATYANG VIBHAG PRAVYAKTATARHA SU.SHA.3/28

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ABSTRACT

Aim: To verify the meaning of sutra **Objectives:** I) To minimise confusion of student in understanding the basic concepts of *yurveda*. II) It will be also helpful to obstetrical point of view in the assessment of normal *Masanumasik Garbha Parivruddhi*. III) It will be helpful for further research in *Masanumasika Garbha Parivruddhi*. **Methods:** Reference of 7th month fetal development was collected from *Susruta samhita* and meaning of the sutra was processed thoroughly to interpret its meaning for our research. For this study 20 cases of healthy pregnant women were selected as per the selection criteria. Ultra sonographic reports based on Fetal growth biometric parameters (i.e. 1- BPD, 2-HC, 3-AC, 4-FL) were collected of these 20 cases in following months (i.e. 4th, 5th, 6th, 7th, 8th.) Finally the differences of all four growth biometric parameters were noted and mean of the results were derived. The mean of differences of 7th month were compared with mean of differences of previous 2 months (i.e. 5th, 6th month) and next 1 month (i.e. 8th month) respectively. Observations were noted down. **Conclusion:** The *Pravyaktataraha* of *Angapratyanga* of *Garbha* was clearly explored in the light of modern information. Understanding the meaning of basic Sutra, in *prima fasciae*, seems to be correct with Biparietal diameter, Head circumference, Abdominal circumference, and Femur length. In brief, the growth indicated by aforesaid fetal growth biometric parameters is moreover or comparatively accomplished in the 7th month, than that of previous or later month's growth.

Keywords: *Masanumasik Garbha Parivruddhi*, Sonographic, *Pravyaktataraha*, *Angapratyanga*

INTRODUCTION

Concepts of '*Garbha*' is portrayed in different ways by various *Acharyas* in *yurveda*. As far as anatomy in *yurveda* is concerned the detailed developmental growth of *Garbha* is given in the form of *Masanumasika* (month wise) *Garbha Parivruddhi* (foetal development) Especially in the *Garbhavakranti* 3rd chapter of *SharirSthana* of *Su ruta samhita*. But it is still unexplored in various aspects in comparison with modern science.¹ In above *Sutra Su ruta* has defined shapes of *Garbha* like *Pinda*, *Peshi* and *Arbuda* by means of

which *Vaidya* can able to interpret, identify the *Linga* (sex) of '*Garbha*'. But here amazing thing is that, how *Su ruta* could succeed in assessing the shape of *Garbha*? Which parameter he used for that? All these questions are still areas of research.¹

Hence I have decided to work on *Masanumasika Garbha Parivruddhi* (month wise foetal development). And so I have taken following *Sutra* from *Masanumasika Garbha Parivruddhi* (month wise foetal development) from *Su ruta* for its interpretation. What would be the exact meaning

of this *sutra*? How they were assessed the *Pravyaktataraha*? Which parameter they were used to understand *Pravyaktataraha* of *Angapratyanga* of 'Garbha'? By considering the entire above critical situation I have decided to interpret the meaning of this *sutra* in present era.

AIMS AND OBJECTIVES

AIMS: To verify the meaning of *sutra* "SAPTAME SARVANG PRATYANG VIBHAG PRAVYAKTATARAH//"*SU.SHA.3/28*

Objectives:

- 1) To minimise confusion of student in understanding the basic concept of *yurveda*.
- 2) It will be also helpful to obstetrical point of view in the assessment of normal *Masanumasika Garbha Parivridhi* (month wise foetal development).
- 3) It will be helpful for further research in *Masanumasika Garbha Parivridhi* (month wise foetal development).

MATERIALS

I] Selection of growth parameters for assessment of 7 month development of fetus by Sonography: Since our **BIOMETRIC PARAMETERS**^{3,4,5}

Table: 1

No.	Short form	Long form
I	B.P.D.	biparietal diameter,
II	H.C.	head circumference,
III	A.C.	abdomen circumference
IV	F.L.	femur length

II] Selection of cases for application of 4 growth parameters:

1. **Case:** 7th month pregnant women
2. **Number of cases** : 20 cases
3. **Selection criteria** :

Inclusion criteria: Random but normal progressive development as per Antenatal Care report based on General Condition of

search is restricted to *sutra* of *Su ruta* we designed our experiment on the basis of first meaning. For that purpose firstly we fixed 4 growth parameters for assessment of comparative growth rate of pregnancy of 20 cases. Prenatal fetal growth assessed by variety of methods. Ultrasonic methods are in vogue for diagnosis of intrauterine growth retardation (I.U.G.R) of fetus. Out of these following 4 methods are most useful. We have utilized these in our research for assessment of comparative growth rate.²*Su ruta* has explained *pratyanga* (organs) in *sharirsthana* of 5th chapter. And it is unable to study all these *pratyanga* (organs) by ultrasonographic method ,because there is no such software present in ultrasonographic machine and the parameters which are present in this software, these are Gestational sac diameter ,Crown rump length, Biparietal diameter ,Head circumference , Abdominal circumference, Femur length .but in my research work specific parameters were taken and these are Biparietal diameter, Head circumference , Abdominal circumference, Femur length.

pregnant (i.e. temp. Pulse, Respiration, Blood pressure, Pallor, Oedema, Height, weight, State of nutrition) .⁶

Exclusion criteria: Unhealthy pregnant woman as per ANC report (Sparameter in inclusion criteria) i.e.

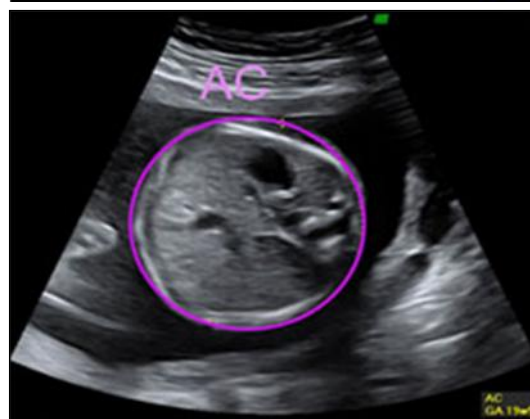
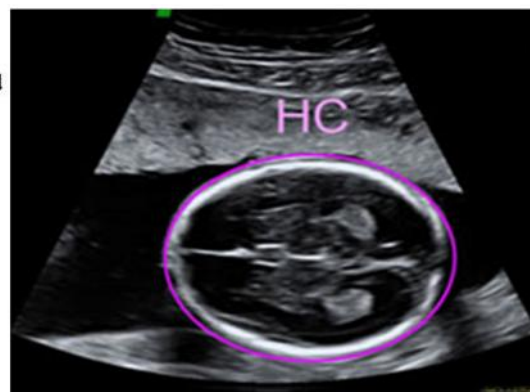
- 1) Pregnant woman suffering from diseases like of heart, lung, thyroid.

2) Congenital malformation of the uterus
III] Conversion of 7th month period into weeks: Considering the difference between days of months of English calendar and Hindu calendar. We decided to convert 7th month period into weeks for proper assessment of growth, which is normally expressed in terms of weeks.

1.7 months x 30 days (according to Hindu calendar) = 210 days in 7th month.

2. 210 days/7 days per week= 30 weeks (as per modern)

So, 7th month development, first week is considered from 27th week and last week is considered at 30th week.



I.e. In case no. 1 B.P.D at
18 weeks: 41.9 mm
22 weeks: 54.1 mm
26 weeks: 69.6 mm
30 weeks: 76.9 mm

OBSERVATIONS: In this observation chapter, we calculate the differences of the 4 biometric growth parameters with the help of above mentioned table in method chapter. Here we explained 1 case, in this

and fetus as per sonographic report.⁶

METHODOLOGY

Application method of 4 fetal biometric growth parameters is as follows

Diagrams showing the method of measurement of BPD, HC, AC, FL respectively. With the help of above showing method, we taken the ultrasonographic report of 20 cases in their respective weeks and these are mentioned in following table for understanding purpose here I am explaining case no. 1.

34 weeks: 87.7 mm
and this method applied to remaining 3 parameters of 20 cases at their respective weeks. And it is noted down in following table.

case we motioned the method of calculation of difference of B.P.D and this method apply to remaining 3 parameters of 20 cases. And these are shown in colorful cells.

(i.e. in 1 case B.P.D at 18 week is 41.9 mm, and in 22 week it is 54.1 mm so ,there difference is 12.2 mm (i.e. 54.1-

41.9 = 12.2) and this method applied to remaining 3 (i.e. H.C., A.C, F.L.) parameters of 20 cases.

Table 2: I] Calculation of the differences of 4 fetal biometric growth parameters

Case No.	Gestation Period in (weeks)	B.P.D (mm)	diff. of bpd	H.C (mm)	diff. of hc	A.C (mm)	diff. of ac	F.L (mm)	diff. of fl
1)	18	41.9	12.2	149.1	44.9	123.8	51.2	26.3	12.9
	22	54.1	15.5	194	52	175	48	39.2	11.9
	26	69.6	7.3	246	40	223	39	51.1	8.9
	30	76.9	10.8	286	26.3	262	27.1	60	4.9
	34	87.7		312.3		289.1		64.9	
2)	17	38.3	12.7	136	44	112.3	49.7	23.3	12.1
	21	51	15.5	180	51	162	52	35.4	17.5
	25	66.5	10	231	48	214	49	52.9	15
	30	76.5	11.2	279	33.3	263	26.1	67.9	-3
	34	87.7		312.3		289.1		64.9	
3)	16	34.6	14.1	122.6	61.4	100.7	45.3	20.3	14.6
	20	48.7	18.7	184	65	146	52	34.9	11.5
	25	67.4	10.6	249	31	198	53	46.4	11.2
	30	78	9.7	280	32.3	251	38.1	57.6	7.3
	34	87.7		312.3		289.1		64.9	
4)	19	45.4	11.6	162	46	135.1	48.9	29.2	12.8
	23	57	12	208	40	184	42	42	11
	27	69	11	248	38	226	42	53	7
	31	80	9.6	286	32.8	268	29.9	60	6.6
	35	89.6		318.8		297.9		66.6	
5)	17	38.3	12.9	136	45	112.3	42.7	23.3	12
	21	51.2	14.1	181	57	155	51	35.3	15.6
	25	65.3	12.9	238	48	206	40	50.9	11.4
	30	78.2	9.5	286	26.3	246	43.1	62.3	2.6
	34	87.7		312.3		289.1		64.9	
6)	17	38.3	12.7	136	32	112.3	33.7	23.3	8.7
	21	51	12	168	38	146	40	32	12
	25	63	11	206	30	186	35	44	10
	29	74	11.6	236	69.3	221	59	54	9
	33	85.6		305.3		280		63	
7)	18	41.9	11.5	149.1	55.9	123.8	50.2	26.3	13.2
	22	53.4	14	205	54	174	47	39.5	9.7
	26	67.4	12.6	259	40	221	46	49.2	9.1
	31	80	9.6	299	19.8	267	30.9	58.3	8.3

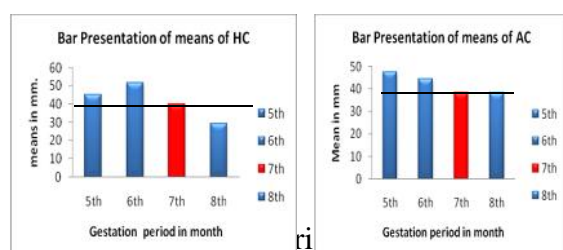
	35	89.6		318.8		297.9		66.6	
8)	18	41.9	10.1	149.1	55.9	123.8	51.2	26.3	13.7
	22	52	15	205	55	175	43	40	11
	26	67	15	260	39	218	31	51	9
	30	82	5.7	299	13.3	249	40.1	60	4.9
	34	87.7		312.3		289.1		64.9	
9)	18	41.9	11.1	149.1	44.9	123.8	50.2	26.3	12.7
	22	53	15.1	194	60	174	49	39	11.1
	26	68.1	12.4	254	46	223	45	50.1	9.9
	31	80.5	9.1	300	18.8	268	29.9	60	6.6
	35	89.6		318.8		297.9		66.6	
10)	18	41.9	15.1	149.1	30.9	123.8	46.2	26.3	16.7
	22	57	15	180	53	170	50	43	15
	26	72	10	233	38	220	38	58	10
	30	82	5.7	271	41.3	258	31.1	68	-3.1
	34	87.7		312.3		289.1		64.9	
11)	17	38.3	16.7	136	45	112.3	45.7	23.3	12.7
	21	55	11	181	59	158	40	36	11
	25	66	8	240	37	198	34	47	7
	29	74	11.6	277	28.3	232	48	54	9
	33	85.6		305.3		280		63	
12)	16	34.6	17.4	122.6	48.4	100.7	57.3	20.3	15.7
	20	52	13	171	65	158	40	36	8
	24	65	10	236	41	198	34	44	6
	28	75	8.4	277	20.8	232	38.7	50	11.1
	32	83.4		297.8		270.7		61.1	
13)	17	38.3	15.7	136	45	112.3	45.7	23.3	11.7
	21	54	11	181	55	158	40	35	11
	25	65	7	236	44	198	30	46	6
	29	72	13.6	280	25.3	228	52	52	11
	33	85.6		305.3		280		63	
14)	18	41.9	13.1	149.1	31.9	123.8	44.2	26.3	13.7
	22	55	13	181	64	168	39	40	9
	26	68	10	245	41	207	36	49	5
	30	78	9.7	286	26.3	243	46.1	54	10.9
	34	87.7		312.3		289.1		64.9	
15)	18	41.9	17.1	149.1	44.9	123.8	48.2	26.3	13.7
	22	59	11	194	61	172	45	40	11
	26	70	7	255	32	217	26	51	6
	30	77	10.7	287	25.3	243	46.1	57	7.9
	34	87.7		312.3		289.1		64.9	

16)	18	41.9	18.1	149.1	40.9	123.8	46.2	26.3	11.7
	22	60	9	190	55	170	33	38	11
	26	69	6	245	45	203	34	49	6
	30	75	12.7	290	22.3	237	52.1	55	9.9
	34	87.7		312.3		289.1		64.9	
17)	18	41.9	11.6	149.1	46.9	123.8	40.2	26.3	8.7
	22	53.5	11.5	196	45	164	45	35	10
	26	65	11	241	38	209	40	45	10
	30	76	11.7	279	33.3	249	40.1	55	9.9
	34	87.7		312.3		289.1		64.9	
18)	17	38.3	13.4	136	50	112.3	49.7	23.3	14.9
	21	51.7	12.6	186	44	162	43	38.2	7.8
	25	64.3	10.7	230	38	205	43	46	5
	29	75	10.6	268	37.3	248	32	51	12
	33	85.6		305.3		280		63	
19)	18	41.9	11.8	149.1	43.9	123.8	52.2	26.3	11.3
	22	53.7	11.5	193	45	176	42	37.6	15.8
	26	65.2	10.8	238	41	218	40	53.4	13.6
	30	76	11.7	279	33.3	258	31.1	67	-2.1
	34	87.7		312.3		289.1		64.9	
20)	19	45.4	9.6	162	48	135.1	49.9	29.2	11.9
	23	55	11.5	210	44	185	44	41.1	12
	27	66.5	9.9	254	41	229	32	53.1	9
	31	76.4	13.2	295	23.8	261	36.9	62.1	4.5
	35	89.6		318.8		297.9		66.6	

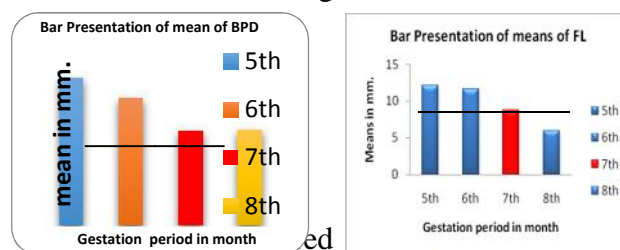
DISCUSSION

So all above consideration, here we selected the 4 specific biometric growth parameters and these were studied into 20 cases of pregnant women in their respective weeks. All these measurements of 4

biometric growth parameters were mentioned into tabular form in the previous chapter of method on page no. and the difference and mean were calculated in the observation chapter on page no. and mean is represented by bar chart .and it is discussed as following-



in bar chart presentation of means is at the level of 7th month mean of respective charts of BPD, HC, AC, FL fetal biometric growth parameters



months means of BPD, HC, AC, FL. It clearly indicates that growth rate is more (of BPD etc) in previous months (here i.e. 5th and 6th) less in later months (here i.e.

8th month) which suggestive the growth of BPD etc. settles at the 7th month of development because of its accomplishment as far as growth is concern.

CONCLUSIONS

1. Understanding the meaning of basic *Su-utra*, in prima fasciae, seems to be correct with bi parietal diameter, head circumference, abdominal circumference, and femur length.
2. We can say that, in brief, the growth indicated by parietal diameter, head circumference, abdominal circumference, femur length, moreover or comparatively accomplished in the 7th month. and this the meaning of that we have interpreted through our research.
3. Apart from above scenario, it is still dilemma that with which parameters *Su ruta* had interpreted the meaning of *Pravyaktataraha* in his era? He might have made

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