Elithair

Hair Transplant Operation Process Approach in Diabetic Patients

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Abbreviations

SC : Subcutaneous

IM : Intramuscular IV : Intravenous

Hair Transplant Operation Process Approach in Diabetes Patients

Institution: **Elit Klinik**
Study Period: **01.01.2024 - 01.08.2024**
Number of Participants: **53 patients**

Summary:

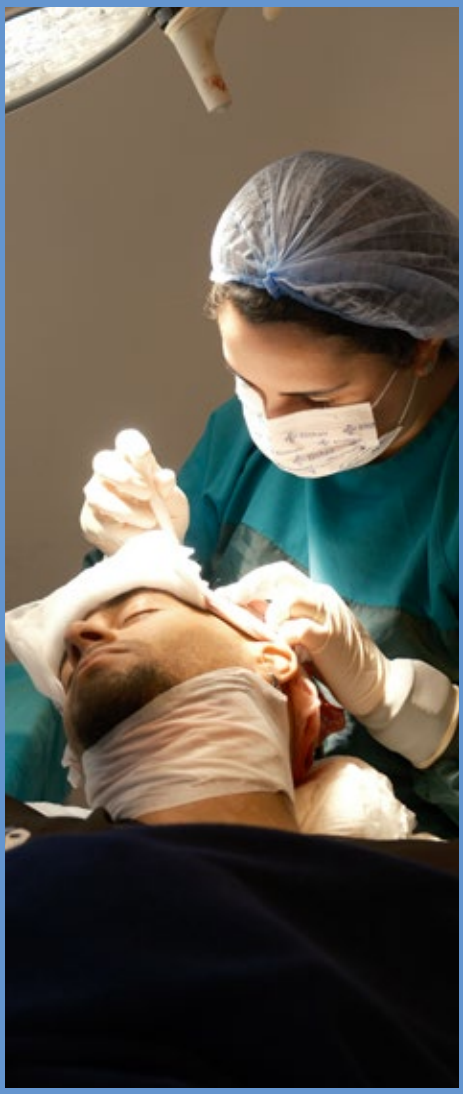
This study aims to evaluate the effectiveness and safety of hair transplant operations in diabetic patients. Conducted at Elit Klinik, the research involved 53 diabetic patients between 01.01.2024 and 01.06.2024. The study thoroughly examined participants' general health conditions, blood sugar levels, and hair transplant outcomes.

Before the operation, all participants underwent a comprehensive health screening, and their blood sugar levels were stabilised. During the procedure, hair follicles were carefully harvested and transplanted. Throughout the process, a special care protocol was followed, considering the potential complications posed by diabetes.

Results showed that diabetic patients could achieve successful outcomes from hair transplant operations. The protocol for hair transplantation in diabetic patients, specific to our clinic, was included in our study. The study emphasises the key points and procedures to be followed in hair transplant operations for diabetic patients.

Hair transplantation was first described by Japanese dermatologist Dr Shoji Okuda in the 1930s; during this period, hair follicles were used as skin grafts (Kim, 2018). However, due to the Second World War, this technique was forgotten for a long time (Chung, 2020). In the 1950s, Dr Norman Orentreich developed modern hair transplantation techniques in the United States and became a turning point in the field of hair transplantation (Lee, 2019). In the 1980s and 1990s, follicular unit transplantation (FUT) and later follicular unit extraction (FUE) techniques were developed and became widespread (Park & Kim, 2021). In recent years, hair transplantation techniques have further advanced, and higher accuracy and efficiency have been achieved by using robotic and automated systems (Shin et al., 2023).

Hair loss is a common problem that negatively affects individuals' self-confidence and can be caused by various reasons (WHO, 2021). In recent years, hair transplantation has become a popular solution for people experiencing hair loss (ADA, 2020). However, hair transplantation for individuals with chronic diseases such as diabetes requires attention to some special conditions (ISHRS, 2019). Diabetes is a disease characterised by uncontrolled high blood glucose levels and can lead to various complications in the body (ADA, 2020). In this article, the risks and points to be considered during the operation in diabetic patients will be examined (Journal of Cosmetic Dermatology, 2018).



Risks during operations with diabetic patients

1.1. Insufficient Blood Supply and Excessive Bleeding

1.1.1. Classification of Haemorrhage

Blood loss or haemorrhage is a critical factor for human health and needs to be carefully monitored. The human body contains an average of 4.5 to 5.5 litres of blood, which accounts for approximately 7% of body weight. The American College of Surgeons categorises blood loss into four classes:

1.1.1.1. Class 1

Loss of up to 15% of the total blood volume (about 750 millilitres). This small loss usually does not cause significant symptoms.

1.1.1.2. Class 2

Loss of 15% to 30% of total blood volume (750 to 1,500 millilitres). Symptoms include increased heart rate and respiratory rate and a slight drop in blood pressure.

1.1.1.3. Class 3

Loss of 30% to 40% of the total blood volume (1,500 to 2,000 millilitres). At this level, there is a marked drop in blood pressure, changes in mental state and an increased heart and respiratory rate.

1.1.1.4. Class 4

Loss of more than 40% of the total blood volume (more than 2,000 millilitres). This can lead to life-threatening conditions such as severe haemorrhage, hypovolemic shock and requires immediate medical attention (Verywell Health) (Encyclopedia Britannica).

1.2.Bleeding and Bleeding Degrees in Hair Transplantation

1.2.1. Insufficient Blood Supply

With the capillary refill test, it is considered insufficient blood supply when it is longer than 3 seconds and occurs because blood glucose levels affect the vasculature.

1.2.2. Adequate Blood Supply

When the capillary filling test is between 40-60 ml and the test is 3 seconds and shorter, it is usually indicative of a healthy hair transplant operation.

1.2.3. Excessive Bleeding

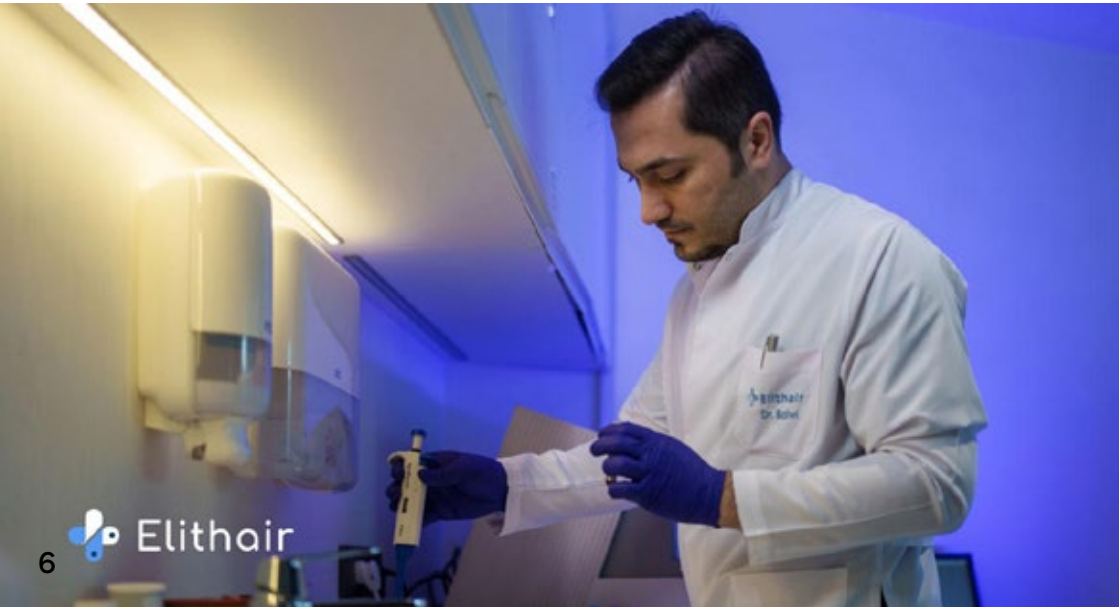
Above 60 ml is considered to be the amount and it is associated with blood pressure.

In studies, the average amount of bleeding measured during the operation is 56.6 millilitres. 56.6 millilitres of blood loss is relatively small, equivalent to approximately 1.3% of the total blood volume of an average adult. This amount is usually not dangerous and is within the body's capacity to respond and recover (Medical Daily).

Vascular stiffness at the capillary level in diabetic patients may also be an important risk factor in surgical interventions such as hair transplantation. High blood glucose levels affecting the vascular structure may cause the hair follicles to not have sufficient blood supply during the implantation process. This situation requires careful evaluation and management before and after surgical intervention. Our protocol for hair transplantation in diabetic patients in case of bleeding is described in Table 1.

Bleeding Condition			
Excessive Bleeding		Insufficient Blood Supply	
B.P. > 120/80 mmHg	B.P. <. 120/80 mmHg	If no bruising	If there is bruising
In our patients whose blood pressure is above normal values during the application: °Blood pressure is monitored. If no decrease is observed: °Antihypertensive is applied and blood pressure and pulse control is continued. °If the values are within the normal range, the transplantation is continued.	**In patients with stable vital signs during the application:** °IV. Transamine is administered to our patient for bleeding control °In cases where bleeding does not stop, 0.5 mg Adrenalin is applied locally. °When the bleeding stops, the transplantation is continued.	**Since it is expected to observe slight bleeding during the application, the operation is continued by monitoring the bleeding situation.**	**If the presence of bruising and mild bleeding is observed in our patients. The process of opening empty canals, which we call the bleeding technique, is applied.** **If insufficient blood supply continues:** °20 mg Corticosteroid SC is applied and the procedure is continued. °If bruising persists; Oxygen therapy, °If bruising persists; PRP treatment, °Finally, 0.6 mg anticoagulant SC is administered.

Table 1.



1.3. Bleeding Condition

1.3.1. Excessive Bleeding

1.3.1.1 In Patients with Blood Pressure Above 120/80 mmHg

- Blood pressure is monitored. If no fall is observed;
- Antihypertensive is administered and blood pressure and pulse rate control is continued.
- If the values are within the normal range, transplantation is continued.

1.3.1.1 In Patients with Blood Pressure Above 120/80 mmHg

- Our patient is administered IV Transamin for bleeding control.
- In cases where bleeding does not stop, 0.5 Mg Adrenalin is applied locally.
- When bleeding stops, transplantation is continued.

1.3.2. Insufficient Blood Supply

1.3.2.1. If there is no bruising

Since it is expected to observe slight bleeding during the application, the operation is continued by monitoring the bleeding situation.

1.3.2.2. If there is bruising

- The process of opening empty channels, which we call the bleeding technique, is applied.
- If insufficient blood supply continues:
- 20 mg Corticosteroid SC is applied and the procedure is continued.
- If bruising persists; Oxygen therapy,
- If bruising persists; PRP treatment,
- If bruising persists; finally 0.6 mg anticoagulant SC is administered.

2. Special approaches during operation in diabetic patients

2.1. Vital signs monitoring

During hair transplantation to diabetic patients, the patient's vital signs are monitored and the blood glucose level is meticulously monitored continuously. This monitoring process enables early detection of potential complications after the operation and provides rapid intervention in the treatment.

2.2. Monitoring of adequate or insufficient blood supply

It is very important to monitor adequate and inadequate blood supply after hair transplantation in diabetic patients. Blood sugar levels should be kept under control and the wound healing process should be closely monitored. The capillary filling level test, which is a blood supply test in diabetic patients, evaluates the adequacy of blood supply by measuring the filling time of the vessels in areas such as the finger or ankle. In the test, the time it takes for the vein to change from white to normal colour should be between 2 and 3 seconds. In diabetic patients, this test is an important indicator for monitoring the recovery process and assesses the efficiency of blood circulation.

2.3. PRP Treatment

PRP treatment involves the injection of plasma obtained by centrifugation from the patient's own blood into the scalp. The plasma is structurally rich in vitamins, proteins, platelets, growth factors and other healing components, which helps to regenerate hair follicles and stimulate hair growth. Furthermore, the anti-inflammatory effects of PRP can also help reduce hair loss.
In diabetic patients, this treatment method is particularly beneficial in terms of improved blood circulation and better nutrition of the scalp. PRP treatment can shorten recovery times during the hair transplantation process and contribute to better results.

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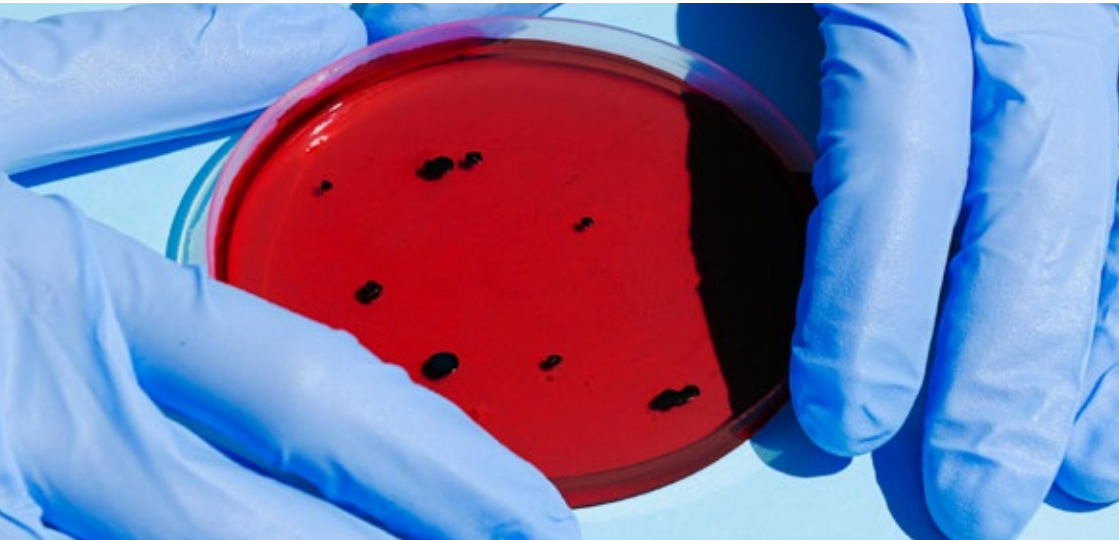
3. Comparisons on hair transplantation process in individuals with diabetes

In this study, the efficacy and safety of hair transplantation operations performed in Elit Klinik between 01.01.2024 and 01.06.2024 with the participation of 53 diabetic patients were evaluated. Before the operation, all participants underwent a comprehensive health screening and their blood glucose levels were stabilised. During the operation, hair follicles were carefully harvested and transferred.

Bleeding Condition	1-5 Years	5-10 Years	10-15 Years	Percentage
Insufficient Blood Supply	6 Patients	9 Patients	8 Patients	44%
Adequate Blood Supply	12 Patients	8 Patients	4 Patients	45%
Excessive Bleeding	2 Patients	1 Patient	3 Patients	11%
Total	20 Patients	18 Patients	15 Patients	53 Patients / 100%

Table 2.



When examining the presence of insufficient blood supply in diabetic patients with 1-5 years of disease, insufficient blood supply was observed in 30%, adequate blood supply in 60.1% and excessive bleeding in 9.9% (Table 3.)

1-5 Years

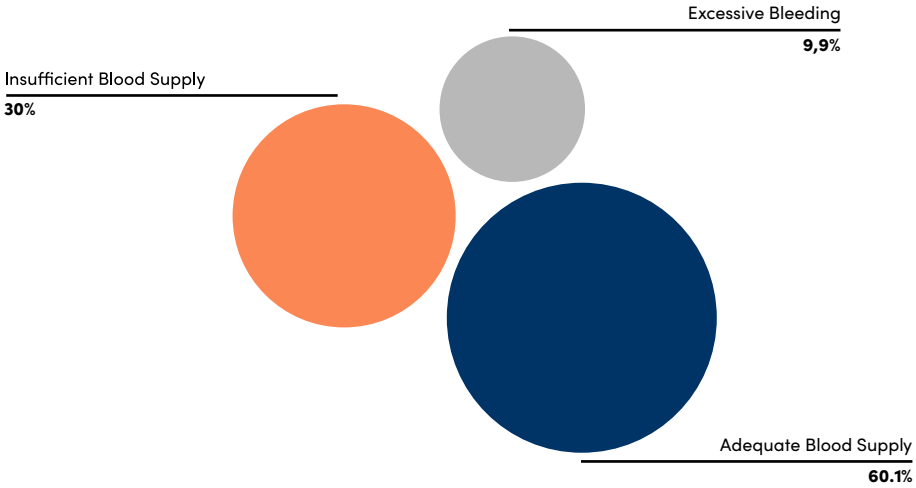


Table 3. (Adequate blood supply ≈ 56.6 ml)

When examining the presence of insufficient blood supply in diabetic patients with 5-10 years of disease, insufficient blood supply was observed in 50.1%, adequate blood supply in 44.6%, and excessive bleeding in 5.3% (Table 4.)

5-10 Years

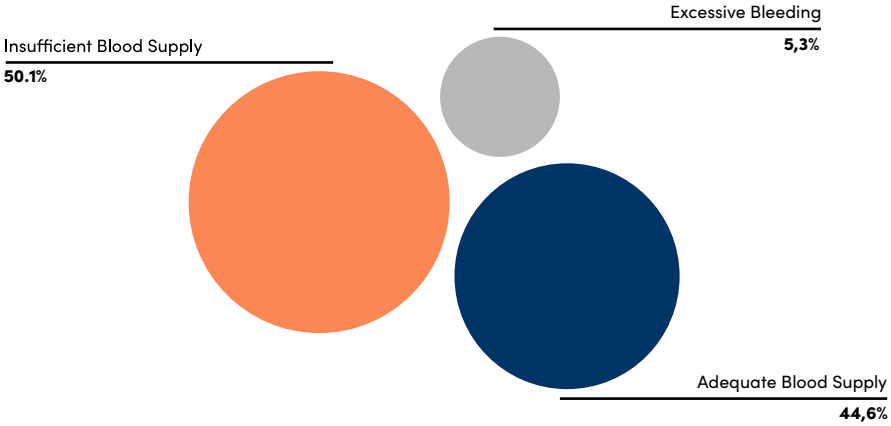


Table 4. (Adequate blood supply ≈56.6 ml)

When examining the presence of insufficient blood supply in diabetic patients with 10-15 years of disease, insufficient blood supply was observed in 53.3%, adequate blood supply in 26,7%, and excessive bleeding in 20,0%. (Table 5.)

10-15 Years

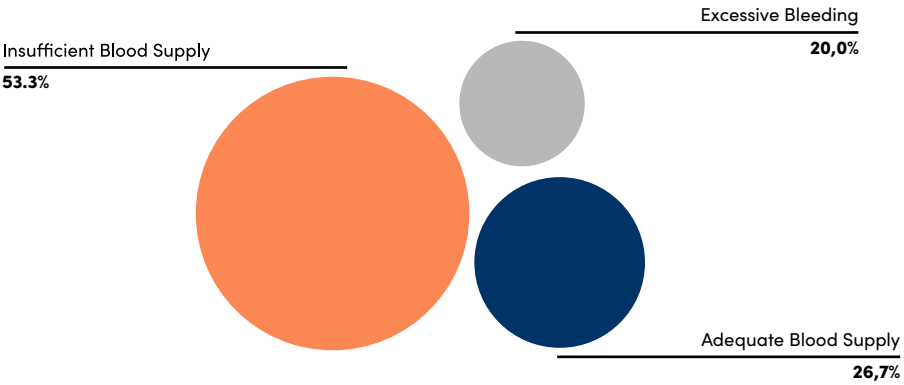


Table 5. (Adequate blood supply ≈56.6 ml)

Type of Diabetes	Adequate Blood Supply	Insufficient Blood Supply	Excessive Bleeding	Percentage
Type 1 Diabetes	10 Patients	12 Patients	2 Patients	56%
Type 2 Diabetes	14 Patients	12 Patients	4 Patients	44%
Type of Diabetes	24 Patients	24 Patients	6 Patients	53 Patients / 100%

Table 6.

When examining the presence of insufficient blood supply in individuals with Type-1 Diabetes, insufficient blood supply was observed in 49.4%, adequate blood supply in 42,3%, and excessive bleeding in 8,3%. (Table 7.)

Type-1 Diabetes

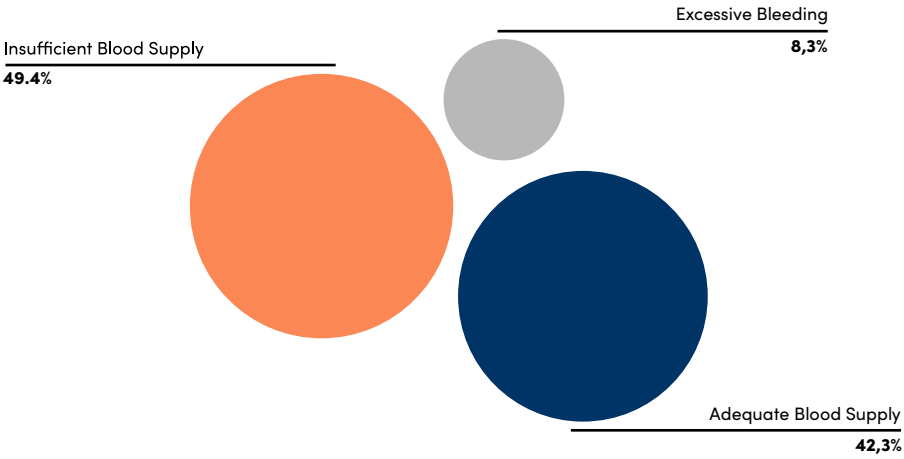
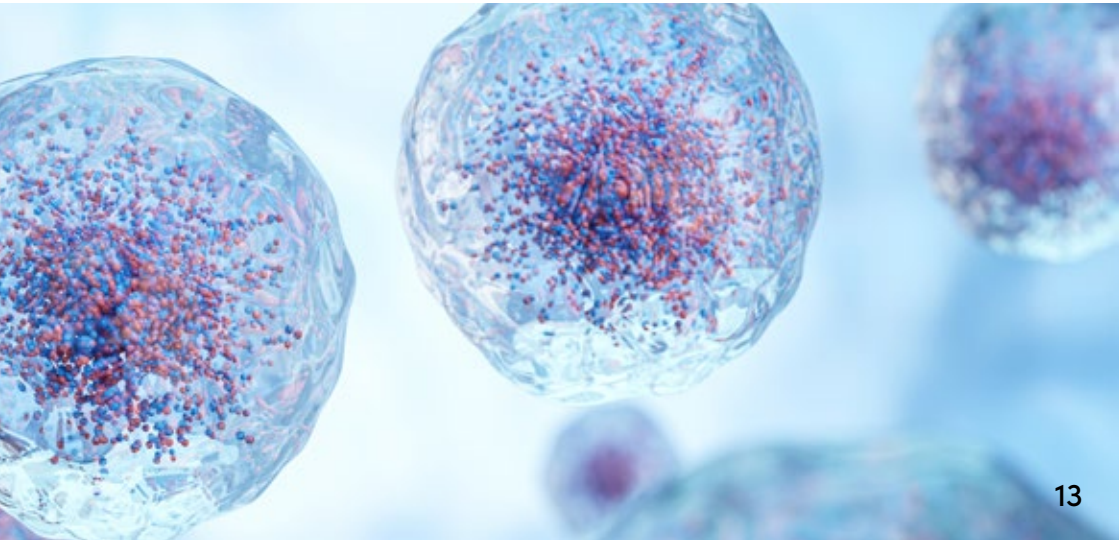


Table 7. (Adequate blood supply ≈ 56.6 ml)



When examining the presence of insufficient blood supply in individuals with Type-2 Diabetes, insufficient blood supply was observed in 39.6%, adequate blood supply in 46,8%, and excessive bleeding in 13,6%. (Table 8.)

Type-2 Diabetes

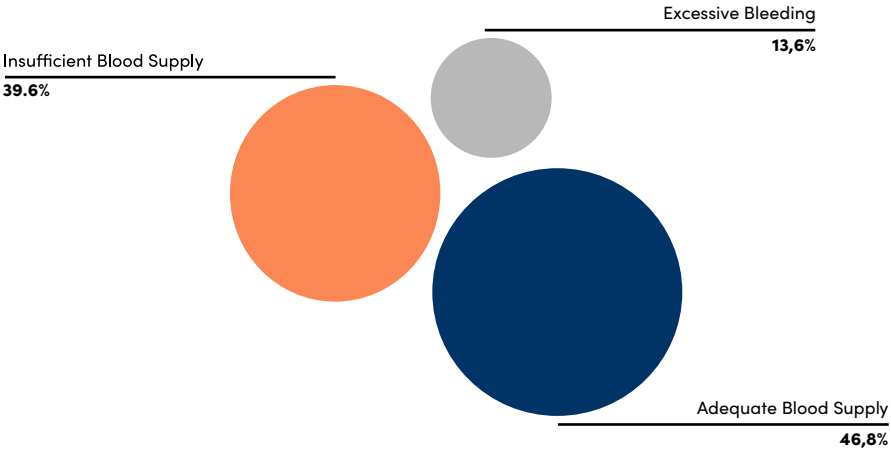


Table 8. (Adequate blood supply ≈56.6 ml)

Blood Glucose Level	Number of Patients	Percentage	Number of Patients with Blood Pressure Out of Reference	Percentage
Number of Patients with Normal Fasting Blood Glucose	17 Patients	32%	Patients	4%
Number of Patients with Fasting Blood Glucose Out of Reference (Fasting Blood Glucose>100)	36 Patients	68%	Patients	8%

Table 9.

When 17 patients with normal fasting blood glucose were analysed during the operation, the presence of patients with blood pressure values outside the reference was observed at a rate of 4% (Table 10.).

When 36 patients with fasting blood glucose levels out of reference were analysed during the operation, the rate of patients with blood pressure levels out of reference was 8% (Table 10.).

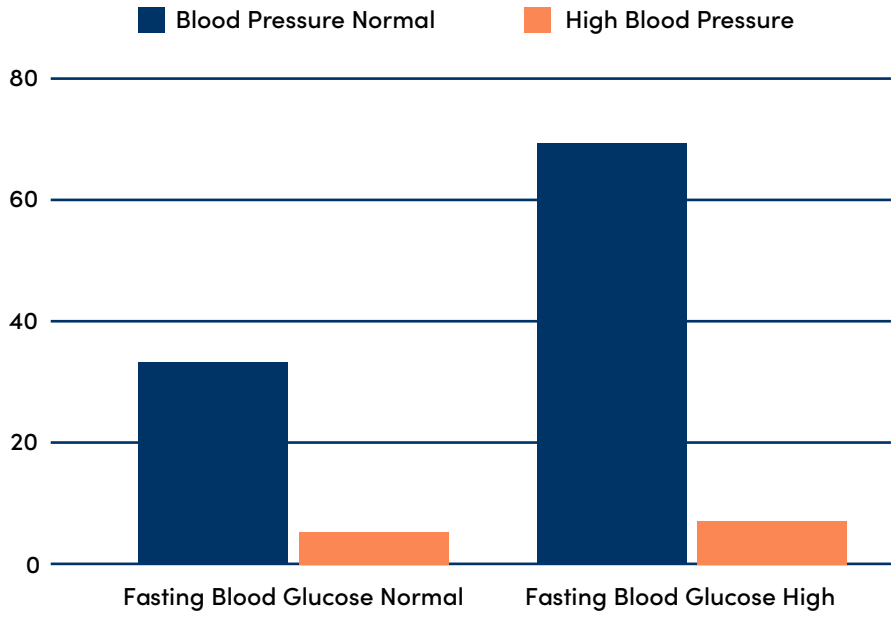


Table 10. (Adequate Blood Supply is ≈56.6 ml.)

4. CONCLUSION

This study demonstrated that hair transplantation operations can be performed safely and effectively in diabetic patients. Taking into account the special needs and potential complications of diabetic patients, hair transplantation operations can give successful results with an appropriate care protocol.

Especially bleeding conditions and blood glucose levels should be carefully monitored and managed during the operation. It has been observed that the rate of excessive bleeding is lower and the rate of adequate bleeding is high in patients with a diabetes history of 1-5 years. In patients with a diabetes history of 10-15 years, it was observed that the rate of excessive bleeding decreased and the rate of insufficient bleeding increased. This emphasises the effect of diabetes duration on the risks of the operation.

It is very important to keep blood glucose levels under control and closely monitor the wound healing process after hair transplantation in diabetic patients; while this is ensured by capillary filling level test that evaluates the adequacy of blood supply, the patient's vital signs are monitored and continuously monitored, so that potential postoperative complications can be detected early and rapid intervention is provided.

PRP treatment has been found to be beneficial in terms of shortening the healing time and improving the results during hair transplantation operations. In addition, it has been determined that the capillary filling disorder caused by diabetes makes it difficult to achieve adequate blood supply during implantation of hair follicles.

In conclusion, when planning hair transplantation operations in diabetic patients, it is recommended to create a personalised treatment plan by taking into account the patients' diabetes history, blood glucose levels and other health conditions. This approach will increase the success of the operation and reduce the risk of complications.

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